PB-243 156

NORTHERN GREAT PLAINS RESOURCE PROGRAM, SOCIO-ECONOMIC AND CULTURAL ASPECTS WORK GROUP REPORT

Northern Great Plains Resource Program

Prepared for:

Department of Agriculture
Department of the Interior
Environmental Protection Agency

June 1974

DISTRIBUTED BY:

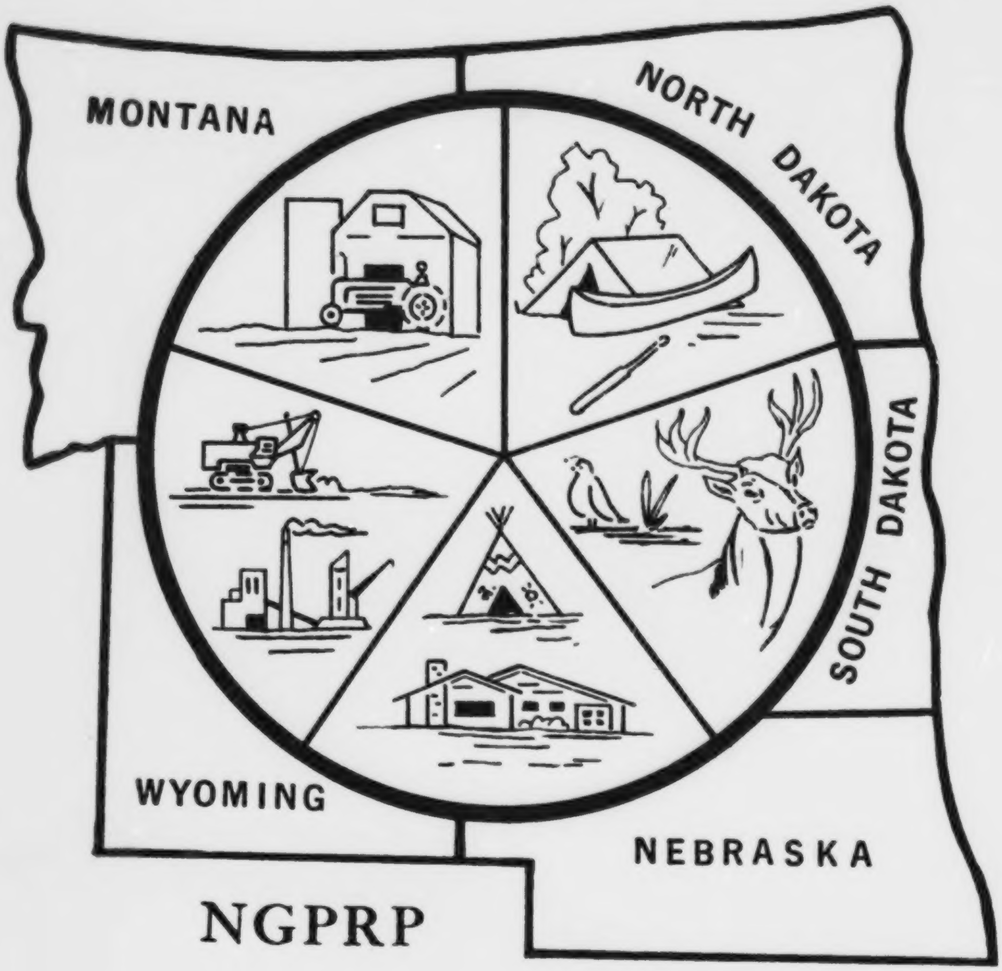
NTIS
National Technical Information Service
U. S. DEPARTMENT OF COMMERCE

198017

PB 243 156

NORTHERN GREAT PLAINS RESOURCE PROGRAM

SOCIO-ECONOMIC AND CULTURAL ASPECTS WORK GROUP REPORT


MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NGPRP

MONTANA
NEBRASKA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF AGRICULTURE
DEPARTMENT OF INTERIOR

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
US Department of Commerce
Springfield, VA. 22151

BIBLIOGRAPHIC DATA SHEET	**1. Report No.** NGPRP/CD-74/700	**2.**	**3. Recipient's Accession No.**

4. Title and Subtitle Northern Great Plains Resources Program Socio-Economic and Cultural Aspects Work Group Report	**5. Report Date** June 1974 **6.**
7. Author(s) Socio-Economic and Cultural Aspects Work Group	**8. Performing Organization Rept. No.**
9. Performing Organization Name and Address Northern Great Plains Resources Program Bldg. 67, Room 820B Denver Federal Center Denver, Colorado 80225	**10. Project/Task/Work Unit No.** **11. Contract/Grant No.**
12. Sponsoring Organization Name and Address Department of Agriculture, Department of Interior, Environmental Protection Agency, States of Montana, Nebraska, North Dakota, South Dakota, Wyoming	**13. Type of Report & Period Covered** Discussion Draft **14.**

15. Supplementary Notes

Supporting documents to this report are numbered consecutively NGPRP/CD-74/701...717

16. Abstracts

Socio-economic and cultural aspects in portions of Montana, Nebraska, North Dakota, South Dakota, and Wyoming are analyzed. Population models that may result from alternative levels of coal development are presented. The impacts of each alternative on social conditions, shifts in power structures, government revenues, public service facility and funding needs, non-governmental services and labor competition are discussed. Specific problems addressed include revenue needs-tax revenues time gap, jurisdictional problems of assuring that revenues are returned to impacted areas, housing needs, ability of local governments to cope with problems. Methods of alleviating these are addressed. Problem areas and areas of further research needs are delineated.

17. Key Words and Document Analysis. 17a. Descriptors

Northern Great Plains	Land Use Planning
Coal Development	Indians
Energy Development	Impacts
Population	Montana
Cultural	Wyoming
Taxes	North Dakota
Services	Housing
Revenues	
Front End Funding	
Socio-Economic	

17b. Identifiers/Open-Ended Terms

PRICES SUBJECT TO CHANGE

17c. COSATI Field/Group

18. Availability Statement No restriction on distribution.	**19. Security Class (This Report)** UNCLASSIFIED	**21. No. of Pages** 200
	20. Security Class (This Page UNCLASSIFIED	**22. Price** $7.00/2.25

i

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

NORTHERN GREAT PLAINS RESOURCES PROGRAM

SOCIO-ECONOMIC AND CULTURAL ASPECTS WORK GROUP

DISCUSSION DRAFT

JUNE 1974

THIS REPORT WAS PREPARED PURSUANT TO A DIRECTIVE DATED OCTOBER 23, 1973, FROM THE PROGRAM MANAGER, NORTHERN GREAT PLAINS RESOURCES PROGRAM. PUBLICATION OF THE FINDINGS AND RECOMMENDATIONS HEREIN SHOULD NOT BE CONSTRUED AS REPRESENTING EITHER THE APPROVAL OR DISAPPROVAL OF THE SECRETARY OF THE INTERIOR, THE SECRETARY OF AGRICULTURE, THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY, OR THE STATES OF MONTANA, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA, AND WYOMING. THE PURPOSE OF THIS REPORT IS TO PROVIDE INFORMATION AND ASSISTANCE TO THE PROGRAM MANAGEMENT TEAM IN THE PREPARATION OF THE DRAFT INTERIM REPORT ON THE NORTHERN GREAT PLAINS RESOURCES PROGRAM. THE PROGRAM MANAGEMENT TEAM IS RELEASING THIS DRAFT FOR PUBLIC USE WITHOUT CORRECTING INCONSISTENCIES OR REWRITING BECAUSE THE DELAY REQUIRED TO ACCOMPLISH THIS TASK WOULD DELAY THE TIMELY ISSUANCE OF THE REPORTS.

TABLE OF CONTENTS

page
PREFACE xiii

SUMMARY 1

Statement of the Problem 1

Implications of Coal Development 2

Findings 3

Recommendations. 6

Report Overview 8

I. INTRODUCTION 11

The Study Area 11

The Scenarios 15

II. POTENTIAL POPULATION CHANGE 21

Population Models 21
Direct and Indirect Employment 22
Total Employment 22
Population Projections 22

Population Effects 26
Net Migration 26
Labor Supply 27
Population Stability 30

The Spatial Impact 33

Further Research Needs 34

III. ANTICIPATED SOCIAL EFFECTS 37

Urbanization of the NGP--A Typology 37
Effects on the Social Order 39
The individual 39
The family 41
Group and sub-cultural relations 43
Rural society 43

Shifts in the Power Structure 45

page

A Comparative Case Study: An Empirical Approach . . 48

Attitudes Toward the Environment: One Wyoming County 57
- Attitudes Toward the Local Areas 57
- Attitudes Toward Specific Industries 58
  - Tourism 59
  - Strip mining 59
  - Logging 60
  - Conclusion 61

Attitudes of Youth Toward Coal Development . . . . .

Communities in Decline: A Case Study 63

Further Research Needs 69

IV. EFFECTS ON INDIANS 75

Overview 76

The Six Most Affected Tribes 78
- Population 78
- Labor Force and Employment 80
- The Indian Family and Income 81
- Educational Levels 82

Anticipated Reservation Coal Development 83

Implications of Crow Development 84
- Further Research Needs 86

Inferences 87

V. EFFECTS ON GOVERNMENTS 91

Sources of State Revenues 92

Sources of Local Revenues 93

Service Requirements and Needs 97
- Local Planning Needs 97
- Streamlining of County and Local Government . . . 100
- Health Care 104
- Welfare Services 109

page
Education 111
Fire Protection 114
Law Enforcement 115
Highways and Roads 116
Public Transportation Facilities 118
Municipal Services 119
Recreation Facilities 120
Costs of Services. 120
Conclusion 123

Spatial, Temporal, and Jurisdictional Disparities. . 123

Some Problems in Revenue and Service Requirements. . 125

Methods of Alleviating Disparities 128
Legislation 129
Federal Aid 132
Planning and Coordination 133
Problem Areas 134
Housing 134
Water and sewer 135
Health care 136
Education 136
Conclusion 138

Development Regulations and Policies 139
Land Use Planning 139
Zoning 141
Minerals Leasing 142
Water 145
Envirnomental Standards 146
Indemnification for Water Loss and Air Pollution . 146
Conclusion 148

Further Research Needs 148

VI. EFFECTS ON NON-GOVERNMENTAL SERVICES 151

Adequacy of Existing Services 152

page
Existing Need for Services 152

Ability of Organizations to Expand 155

Demand for New Services 156

Conclusion 157

Further Research Needs 158

VII. OVERVIEW 159

REFERENCES 163

I. Work Group Supporting Documents: Available in NGPRP Public Repositories 163

II. Other References 170

APPENDIX 172

I. Listing of Study Area Counties by States 172

II. Minority Reports 173

LIST OF TABLES

page

Table 1. Net migration in the Northern Great Plains impact area, 1960-1970 12

Table 2. Projected increase over 1972 facilities and capacities 17

Table 3. Estimated employment associated with coal development activities 18

Table 4. Employment related to coal development, scenarios I, II, and III 23

Table 5. Total employment projections for 1980, 1985, and 2000, by State impact areas, scenarios I, II, and III 24

Table 6. Total population projections for 1980, 1985, and 2000, by State impact areas, scenarios I, II, and III 25

Table 7. Net migration in Montana and Wyoming impact areas 27

Table 8. Per capita money income for Montana, Nebraska, North Dakota, Wyoming, and for impact areas as percent of U.S. income, 1970. 29

Table 9. Earnings distribution of a typical coal gasification plant and Mercer County, North Dakota male workers 30

Table 10. Indian land and residents by reservation, 1973 79

Table 11. Indian population change, 1963-1973 80

Table 12. Unemployment rates: North Dakota, South Dakota, and Montana compared to Indian reservations within their boundaries, 1970 81

Table 13. Family size and income: Indians compared to total population 82

Table 14. Tax levies affected by coal development by State 92

page

Table 15. Coal royality estimates, State and Federal, for selected counties by scenario 94

Table 16. Percentage distribution of property taxes in selected Northern Great Plains counties, 1974 96

Table 17. Direct general expenditures of State and local governments per capita, by State 98

Table 18. Location of active physicians (M.D. and D.O.) in relation to population: December 31, 1967 105

Table 19. New classroom space and costs for selected counties, Scenario II 112

Table 20. Added personnel and salary requirements for education in selected counties, Scenario II 113

Table 21. Approximate county budget requirements, selected counties, by scenarios 122

Table 22. Percent of county budgets funded by county purpose tax levies, selected counties, fiscal year 1974 123

Table 23. Estimated increase in county budget requirements and increased county tax revenues over 1974 levels, selected counties, Scenario II 124

Table 24. School budgets versus tax revenue: Increases over 1974, Big Horn County, Montana and Sheridan County, Wyoming, Scenario II 126

LIST OF FIGURES

page

1. Socio-Economic Work Group Study Area, and Location of Commercial Coal Deposits, Northern Great Plains States. 13

2. Principal Impact Areas, Northern Great Plains States. . 14

3. Estimated Annual Average Construction Employment During Construction of Facilities for Mining, Electrical Plants, and Gasification Plants, Campbell County, Wyoming, 1975-2000 31

4. Possible Revision of Local Government (As Implemented in Rock Springs, Wyoming). 102

PREFACE

The report contained herein represents a summary of the findings of Work Group F, Socio-Economic and Cultural Aspects of Coal Development in the Northern Great Plains. This work group is one of seven designated to provide information for the Northern Great Plains Resources Program (NGPRP). The other six are: A--Regional Geology, B--Mineral Resources, C--Water, D--Atmospheric Aspects, E--Surface Resources, and G--National Energy Considerations. The Program itself is comprised of three lead Federal agencies (the Department of Agriculture, the Environmental Protection Agency, and the Department of Interior) and five States (Montana, Nebraska, North Dakota, South Dakota, and Wyoming), each of which has a jurisdictional responsibility in areas likely to be impacted by coal development. The stated purpose of the NGPRP is to provide information for use by decisionmakers concerning potential coal development and associated impacts. Support has come largely through redirected effort on the part of State and Federal agencies.

The work groups were formed in February 1973 and were originally scheduled to operate through December 1975. However, a shift in emphasis has altered this timing in order to provide information for the NGPRP interim report which was to be released at the end of June 1974. Work Group F was charged to provide information concerning the socio-economic and cultural aspects of coal development in the Northern Great Plains. The Work Group product has been developed through the efforts of many people, including those assigned from Federal and State agencies and others who simply became interested in the group.

Despite considerable effort, the Work Group got off to a slow start. The summary report is based on 20 studies and their supporting documents; by the end of August 1973, only 5 of these studies had been initiated. It was not until the fall of 1973 that most of the studies were actually begun. By November 15, sufficient information had become available from which to generate the population projections that form the backbone of much of the analysis in this report. The studies were scheduled for completion in time to provide input to an April 1 Work Group summary report. However, on January 23, the deadline for submission of the report and supporting documents was extended by the Program Management Team. During February, the final 6 of the 20 studies were initiated.

The report has various limitations, some of them due, at least in part, to the slow and uneven start. The complexities of socio-economic problems are so great, the Work Group could not have adequately pursued them in appropriate depth in the time allowed even if adequate resources had been available. Adequate resources were not assigned by the Federal agencies responsible for human resources. We hope these limitations have been made sufficiently clear in the text of the report. Where information is lacking, subject areas for further research are identified. The supporting documents upon which this report is based are cited as appropriate, and are listed with their abstracts in the appendix. These documents will be available in the Northern Great Plains Resources Program repositories in the summer of 1974.

The Economic Research Service, U.S. Department of Agriculture, was the lead agency. Following is a list of contributors and other participants in the study.

I. Lead Agency: Economic Research Service, U.S. Department of Agriculture

II. Persons responsible for individual supporting studies and for writing Work Group report.

David Bickel
Experimental College
Minot State College
Minot, North Dakota

Sam Carnes
Center for Urban Affairs
Northwestern University
Evanston, Illinois

Eric Clausen, Chairman
Experimental College, Earth
Science, Minot State College
Minot, North Dakota

Norman L. Dalsted
Dept. of Agricultural Eco.
North Dakota State University
Fargo, North Dakota

Arne M. Degn
Bureau of Indian Affairs
Planning Support Group
Billings, Montana

John Farber
Office of State-Federal
Relations
Cheyenne, Wyoming

Cecil L. French, Head
Dept. of Sociology
Lakehead University
Thunderbird, F. Ontario

H. Paul Friesema
Center for Urban Affairs
Northwestern University
Evanston, Illinois

Raymond Gold
Department of Sociology
University of Montana
Missoula, Montana

Robert Graham
Bureau of Economic Analysis
U.S. Department of Commerce
Washington, D.C.

Charles Humphrey
Dept. of Agricultural Eco. Ext.
North Dakota State University
Fargo, North Dakota

Larry Leistritz
Dept. of Agricultural Eco.
North Dakota State University
Fargo, North Dakota

Edward L. Leland
Bureau of Reclamation
Billings, Montana

Kathe Lemmerman
Experimental College
Minot State College
Minot, North Dakota

Oscar Lund
So. Dakota Sta. Planning Bureau
State Capital
Pierre, South Dakota

Clark Markel
Experimental College
Minot State College
Minot, North Dakota

Roger Matson
Water Resource Res. Institute
University of Wyoming
Laramie, Wyoming

Sandy McCaw
Office of Economic Opportunity
Denver, Colorado

Tom Meissner
Action for Eastern Montana
Glendive, Montana

Charles G. Newton
Office of State-Federal
Relations
Cheyenne, Wyoming

Frank H. Osterhoudt
USDA-ERS-NRED
Washington, D.C.

Donald Patterson
Center for Interdisciplinary
Studies
Montana State University
Bozeman, Montana

Paul Polzin
Bureau of Bus. and Eco. Res.
University of Montana
Missoula, Montana

Jeanette B. Studer
Division of Business and
Economic Research
University of Wyoming
Laramie, Wyoming

James P. Twomey
Washington, D.C.

Anita Wallner
Dept. of Agricultural Eco.
and Eco.
Montana State University
Bozeman, Montana

Warren White
Nebraska State Office of
Planning and Programming
State Capital
Lincoln, Nebraska

Anne Williams
Department of Sociology
Montana State University
Bozeman, Montana

Mike York
Department of Economic
Planning and Development
Cheyenne, Wyoming

III. Other participants and interested persons.

Carolyn Alderson
Birney, Montana

Ken Ancell
Panhandle Eastern Pipeline
Houston, Texas

Dale Anderson
Water Resources Research
Inst.
North Dakota State University
Fargo, North Dakota

Jean Anderson
League of Women Voters
Billings, Montana

John D. Andrick
Northern Great Plains
Resources Program
Denver, Colorado

Irene Anthony
Dept. of Housing and
Urban Development
Washington, D.C.

Rick Applegate
Bozeman, Montana

Margaret Arp
Sierra Club
Boulder, Colorado

Robert G. Asheim
Executive Vice President
Black Hills Power & Light Co.
Rapid City, South Dakota

Donald Bailey
Lame Deer Stage
Forsyth, Montana

Robert Bailey, Coordinator
Northern Cheyenne Research
Proj.
Lame Deer, Montana

Dan Baker
Bureau of Land Management
Wyoming State Office
Cheyenne, Wyoming

Thomas Barocci
Policy Evaluation and Research
Department of Labor
Washington, D.C.

David Bartel
Associated Press
Bismarck, North Dakota

Arnold Bateman
SDSU Ag. Res. & Extension
Ctr.
Rapid City, South Dakota

Roger R. Bay
USDA-Forest Service
Washington, D.C.

Brooke Beaird
Atlantic Richfield Company
Gillette, Wyoming

Kenneth Beartusk
Northern Cheyenne Council
Lame Deer, Montana

Audie L. Belevens, Jr.
Department of Sociology
University of Wyoming
Laramie, Wyoming

Robert R. Bell
Economic Development
Association of Eastern
Montana
Sidney, Montana

Lloyd D. Bender
USDA-ERS-EDD
Bozeman, Montana

Gary Bennethum
Bureau of Land Management
Washington, D.C.

Sheryl Bergen
North Dakota Project
Bismarck, North Dakota

Robert K. Bergman
National Park Service-
Washington
Department of the Interior
Washington, D.C.

John Berringer
Community Development
Coordinator
Rural Electrification Admin.
U.S. Department of Agriculture
Washington, D.C.

Tom Bethell
Washington, D.C.

W. Gale Biggs
Dames and Moore Consultants
Denver, Colorado

Jim Binando
Bureau of Land Management
Billings, Montana

Dick W. Birkholz
Sheridan, Wyoming

Dwight Blood
Division of Business and
Economic Research
Laramie, Wyoming

C. Ronald Bloom
State Planning Agency
Pierre, South Dakota

E. Ralph Bohannon
Bureau of Indian Affairs
Billings, Montana

Russell Boulding
Environmental Defense Fund
Boulder, Colorado

Richard Bourke
Environmental Quality Council
Helena, Montana

Carson Boyd
Fort Peck Tribes
Poplar, Montana

Lynn A. Brant
Air Quality Bureau
Helena, Montana

Harry M. Bridgeman
Dames and Moore Consultants
San Francisco, California

Sheldon Brooks
Bureau of Indian Affairs
Billings, Montana

Elliott A. Browar
Regional Director
Bureau of Labor Statistics
Kansas City, Missouri

Gordon Browder
Department of Sociology
University of Montana
Missoula, Montana

Keith Brown, President
Wyo-Ben Products, Inc.
Billings, Montana

Len Brown
Office of Water Resources
Research
Department of Interior
Washington, D.C.

J. D. Brunk
Department of Economic
Planning and Development
Cheyenne, Wyoming

John Buffolohon
Bureau of Indian Affairs
Ft. Peck
Poplar, Montana

William Burnett
Old West Regional Commission
Rapid City, South Dakota

James Canan
Bureau of Indian Affairs
Billings, Montana

James Cannon
Council on Economic Priorities
New York, N.Y.

Paul Carpino
Denver, Colorado

Kathy Carter
Division of Intergovernmental
Relations
Dept. of Housing and Urban
Development
Washington, D.C.

Hon. Bill Christiansen
Hardin, Montana

Theodore H. Clack, Jr.
Office of Lieutenant Governor
Helena, Montana

George Collins
EPA, Region VIII
Denver, Colorado

Margaret Ann Cook
Lawrence, Kansas

Ellen Cotton
Decker, Montana

Robert Coltrane
USDA-ERS-NRED
Washington, D.C.

Otis Copeland
U.S. Forest Service
Ogden, Utah

Melvin L. Cotner
USDA-ERS-NRED
Washington, D.C.

William Crosswhite
USDA-ERS-NRED
Washington, D.C.

Charles T. Crowley
Rural Electrification
Administration, USDA
Washington, D.C.

Frank Culver
Department of Natural
Resources and Conservation
Helena, Montana

Lynn Daft
USDA-ERS
Washington, D.C.

Ed Dahle
Busby, Montana

Jack Davidson
Water Resources Research Inst.
University of Wyoming
Laramie, Wyoming

Thomas Daves
Department of Economics
South Dakota State University
Brookings, South Dakota

Thomas Day
Dept. of Economics
South Dakota State University
Brookings, South Dakota

George Dayton
U.S. Department of Labor
Federal Office Building
Denver, Colorado

Lois Dean, Director
Division of Intergovernmental
Relations
Department of HUD
Washington, D.C.

Alan Dickerman
Bureau of Land Management
Denver, Colorado

Thomas Dobbs
Dept. of Agricultural Eco.
University of Wyoming
Laramie, Wyoming

Ed Dobson
Friends of the Earth
Billings, Montana

Gerald Doeksen
Rural Development Service,
USDA
Stillwater, Oklahoma

Joseph Doherty
Rural Development Service,
USDA
Washington, D.C.

Torian Donohoe
Nye, Montana

Nina Dougherty
Sierra Club Northern Plains
Regional Conservation Commis.
Chadron, Nebraska

Richard W. Douglas
Buffalo, Wyoming

Richard Draper
Department of Planning and
Economic Development
Helena, Montana

Donald P. DuBois
Environmental Protection
Agency
Denver, Colorado

William F. Duhamel
Duhamel Broadcasting
Enterprises
Rapid City, South Dakota

R. Thomas Dundas
Division of Information Systems
Montana Department of Planning
and Economic Development
Helena, Montana

Mike Dunham
ACTION
Helena, Montana

Robert Eastman
Assistant Director of Federal
Programs
Bureau of Outdoor Recreation
Department of the Interior
Washington, D.C.

Douglas Egan
Social and Rehabilitative
Services
Helena, Montana

Clell Elwood
Department of Health Education
and Welfare
Denver, Colorado

Grace Estes
Lower Brule
Tribal Council
Lower, South Dakota

Rich Eudy
Economic Development Association
of Eastern Montana
Sidney, Montana

James Falvey
Energy Planning Division
Department of Natural
Resources
Helena, Montana

Larry Finnerty, Director
Sixth Plan and Dev. Division
Rapid City, South Dakota

Allen L. Fisk
Bismarck, North Dakota

Kathy Fletcher
Environmental Defense Fund
Denver, Colorado

Robert Fletcher
Dept. of Agricultural Eco.
University of Wyoming
Laramie, Wyoming

Daniel Foote
Northern Cheyenne Tribal
Council
Lame Deer, Montana

Sally Forbes
Sheridan, Wyoming

Marion Forrester, Economist
Office of Policy and Plans
Development
Washington, D.C.

Charles Fortney
Mary College
Bismarck, North Dakota

Ralph Red Fox
Busby, Montana

Margot Fraker
Dept. of the Interior
Denver, Colorado

Tom Fredrick
Boulder, Colorado

John C. Frey
Institute of Research for
Land and Water Resources
Pennsylvania State University
University Park, Pennsylvania

H. Paul Friesema
Public Lands Project
Northwestern University
Evanston, Illinois

Glen Fulcher
Bureau of Land Management
Denver, Colorado

Ben F. Gallegos
Bureau of Indian Affairs
Lame Deer, Montana

Mike Gansecki
EPA, Region VIII
Denver, Colorado

Rulon P. Garfield
DHEW Regional Director
Denver, Colorado

Stephanie Garrett
Department of the Interior
Washington, D.C.

Phil O. Gibbs
Bureau of Reclamation
Billings, Montana

Tom Gill
Environmental Quality Council
Helena, Montana

John Goers
Office of Lieutenant Governor
Capital Building
Helena, Montana

Alvina Graybear
Tribal Council
Standing Rock
Fort Yates, North Dakota

C. E. Grimes
Governor's Office
Helena, Montana

Thomas F. Hady
USDA-ERS-EDD
Washington, D.C.

George Hairif
Missoula, Montana

James H. Halley
Executive Vice President
Bunker Hill Company
Kellogg, Idaho

Blaine Halliday
Casper, Wyoming

Kent Hamilton
Bureau of Indian Affairs
Billings, Montana

Adrien Hannus
Dept. of Rural Sociology
South Dakota State University
Brookings, South Dakota

Brian Hanson
Economic Development
Association of Eastern
Montana
Sidney, Montana

John Hanson
Office of Economic
Opportunity
Denver, Colorado

Carol Harlow
Northern Plains Resource Council
Billings, Montana

Gene Hassel
Project SEAM, USDA-FS
Billings, Montana

Marion T. Hedegaard
Planning Support Group, BIA
Billings, Montana

Thor Hertsgaard
Dept. of Agricultural Eco.
North Dakota State University
Fargo, North Dakota

Paul Hessinger
United Plainsmen Association
Bismarck, North Dakota

John Heyman
Bench Ranch
Fishtail, Montana

John Heyob
Office of Director
U.S. Department of Health
Education and Welfare
Denver, Colorado

Laney Hicks
Northern Plains Representative
Dubois, Wyoming

Joseph Hines
Department of Labor
Bureau of Labor Statistics R.O.
Kansas City, Missouri

Dr. Paul M. Hoff, Jr.
Kendrick Cattle Co.
Denver, Colorado

Helmar Holji
Water Resources Research
Institute
Montana State University
Bozeman, Montana

Lyle Hollenbeck
Bureau of Outdoor Recreation
Denver, Colorado

Gloria Horiuchi
Department of HUD
Denver, Colorado

Betty Horsch
Kelly Walsh High School
Casper, Wyoming

John T. Howley, Director
Interdepartmental Liason ORA
Washington, D.C.

Roy Huffman
Montana State University
Bozeman, Montana

Ed Imhoff
Missouri River Basin
Commission
Omaha, Nebraska

James O. Jackson
Bureau of Indian Affairs
Billings, Montana

George S. Jennings
Bureau of Indian Affairs
Indian Water Rights Office
Denver, Colorado

David Jensen
Community Action Program
Billings, Montana

Patrick Jobes
Department of Sociology
Montana State University
Bozeman, Montana

Gerald W. Johnson, Director
Division of Applied Technology
Atomic Energy Commission
Washington, D.C.

Helen Johnson
USDA-ERS-EDD
Washington, D.C.

Maxine Johnson
Bureau of Business and
Economic Research
University of Montana
Missoula, Montana

Robert Jones
Chief, Division of E&PC
Bureau of Land Management
Department of the Interior
Washington, D.C.

William E. Jones
Bureau of Fish and Wildlife
Billings, Montana

Max Jordan
USDA-ERS-EDD
Washington, D.C.

David B. Joseph
EPA, Region VIII
Denver, Colorado

Alvin M. Josephy
American Heritage Magazine
New York, N.Y.

Archie Judson
Sixth Planning and
Development District
Rapid City, South Dakota

Linley E. Juers
USDA-ERS
Fort Collins, Colorado

Fred Kaiser
USDA-Forest Service
Washington, D.C.

Gus Karabotsos, Chief
Planning Division
U.S. Army Engr. Div.
Missouri River
Omaha, Nebraska

Ken Karls
The NOKOTA Company
Bismarck, North Dakota

Ernie Kemmis
Bureau of Land Management
Billings, Montana

John B. Kendrick II, President
Kendrick Cattle Company
Sheridan National Building
Sheridan, Wyoming

Steven Kologi
Montana Dept. of Highways
Helena, Montana

Kenneth Krabbenhoft
Midwest Regional Office
National Park Service
Omaha, Nebraska

Orville E. Krause
USDA-ERS-NRED
Washington, D.C.

John Kuehn
USDA-ERS-EDD
Columbia, Mississippi

Peter Kuh
Washington, D.C.

Norman Landgren
USDA-ERS-NRED
Lincoln, Nebraska

James Van Lanen
Economics Department
Montana State University
Bozeman, Montana

Linda Laskowski
Northwestern Bell Telephone Co.
Fargo, North Dakota

Henry Lebak
State Planning Division
Bismarck, North Dakota

Van A. Lindquist
Intergovernmental Coordinator
Sixth Planning and Dev. District
Rapid City, South Dakota

Avard B. Linford
Bozeman, Montana

William O. Lockman
Environmental Analyst
American Metal Climax, Inc.
Denver, Colorado

Ralph Loomis
USDA-ERS-EDD
Pullman, Washington

Oscar Lund
South Dakota State Planning
Pierre, South Dakota

Bernard Manheimer
Dept. of HUD
Washington, D.C.

Bill and Sue Manning
School of Natural Resources
University of Michigan
Ann Arbor, Michigan

Ardell Maraldson
North Dakota Project
Bismarck, North Dakota

Richard Marks
USDA-Extension Service
Washington, D.C.

Glenn Martin
Cincinnati, Ohio

Karen May
Dickinson, North Dakota

Albert G. Melcher
ROMCOE
Denver, Colorado

Stew Mettler
AMAX Company
Billings, Montana

Jesse Miller, Chairman
ARAPAHOE Business Council
Fort Washakie, Wyoming

Paul Miller
University of Montana
Missoula, Montana

Jared Mondry
Department of HUD
Denver, Colorado

Edwin F. Montogomery
USDI-Bureau of Land
Management
Denver, Colorado

Bud Moran
Northern Cheyenne Tribes
Lame Deer, Montana

Gloria Morrison
Community Action Program
Billings, Montana

William Motes
USDA-ERS-EDD
Washington, D.C.

John Muehlbeir, Secretary
Great Plains Agricultural
Council
USDA-ERS
Lincoln, Nebraska

Kit Muller
Northern Plains Resource
Council
Billings, Montana

Kenneth Murdock
Office of Chief of Engineers
Washington, D.C.

Alfred McAdams, Sr., Chairman
SHOSHONE Business Council
Fort Washakie, Wyoming

John McBride
Department of Geology
University of Montana

Richard J. McConnen
Dept. of Agricultural Eco.
and Eco.
Montana State University
Bozeman, Montana

R. D. McKinney
Department of HUD
Denver, Colorado

Kenneth McLennan
Deputy Assistant Secretary
Policy Evaluation and Research
Department of Labor
Washington, D.C.

Wallace McMartin
USDA-ERS-NRED
Fargo, North Dakota

Wallace McRae
Lame Deer Stage
Forsyth, Montana

Jack Neckels, Director
State Planning Division
Bismarck, North Dakota

Lee Nellis
Laramie, Wyoming

Norman E. Nelson
Black Hills Group, Sierra
Club
Rapid City, South Dakota

William Nelson
Dept. of Agricultural Eco.
North Dakota State University
Fargo, North Dakota

Fletcher Newby
Environmental Quality Council
State Capital
Helena, Montana

Daniel Newman
Montana Office of Eco.
Opportunity
Helena, Montana

Charles G. Newton
Office of State-Federal
Relations
Cheyenne, Wyoming

James Nybo
Montana Dept. of Natural
Resources
Mitchell Building
Helena, Montana

David H. Olson
Casper, Wyoming

Calvin Oraw
CES
Sidney, Montana

John Orcutt
U.S. Dept. of Agriculture
Denver, Colorado

Bernice Palmer
Bismarck, North Dakota

J. Zyerk Palter
Roy F. Weston Consultants
Westchester, Pennsylvania

Wilson J. Parker
Lincoln, Nebraska

John Pereau
Bureau of Indian Affairs
Northern Cheyenne Agency
Lame Deer, Montana

Jack Peterson
Old Boise Library
Boise, Idaho

Clynn Phillips
Water Resources Research
Inst.
University of Wyoming
Laramie, Wyoming

Vincent Picard
Wyoming Association of
Counties
Laramie, Wyoming

Steve Plotkin
Office of Research
Environmental Protection
Agency
Arlington, Virginia

Leon Poitras
Crow Water Commission
Bureau of Indian Affairs
Crow Agency, Montana

Dennis W. Potter, Director
Fifth District Planning and
Development Commission
Pierre, South Dakota

Robert Potter
USDA-Forest Service
Washington, D.C.

William Pulford
Bureau of Land Management
Denver Federal Center
Denver, Colorado

M. E. Quenemoen
Cooperative Extenstion
Service
Montana State University
Bozeman, Montana

J. J. Ratchye
Peter Kiewitt Son's, Co.
Sheridan, Wyoming

Jenny Redlin
Minot, North Dakota

William E. Rennebohm
Bureau of Outdoor Recreation
Department of Interior
Washington, D.C.

Clark Row
Forest Economics Research-
USDA
Washington, D.C.

Allen Rowland
Northern Cheyenne Agency
Lame Deer, Montana

Ed Royce
Environmental Protection
Agency
Arlington, Virginia

George Rucker
Rural Housing Alliance
Washington, D.C.

Nancy Rudio
AMAX Company
Billings, Montana

Charles Rust
Cooperative Extension Service
Montana State University
Bozeman, Montana

Dennis Sachs
Office of Secretary,
Program Dev.
Department of Interior
Washington, D.C.

Jim Sansaver
Bureau of Indian Affairs
Billings, Montana

James Saterlee
Dept. of Rural Sociology
South Dakota State University
Brookings, South Dakota

John J. Schanz, Jr.
Denver Research Institute
Denver, Colorado

Lyle P. Schertz
USDA-Economic Research Service
Washington, D.C.

Eldon C. Schriner
Dept. of Sociology-Anthropology
North Dakota State University
Fargo, North Dakota

John Schwechten
Community Action Program
Billings, Montana

Donald M. Senechal
Dept. of Agricultural Eco.
North Dakota State University
Fargo, North Dakota

Vincent W. Shalley
Huron, South Dakota

Jim Shaw
Environmental Protection Agency
Denver, Colorado

Father William Sherman
Lecturer/Sociology Dept.
North Dakota State University
Fargo, North Dakota

Arnold J. Silverman
Geology Department
University of Montana
Missoula, Montana

Alfred Smith
Buffalo, Wyoming

Harold M. Smolnikar
Chief Project Engineer
Consolidation Coal Company
Englewood, Colorado

Lora Snake
Winnegago, Nebraska

Alonso Spang
Bureau of Indian Affairs
Northern Cheyenne Agency
Lame Deer, Montana

Sidney J. Spiegel
Bureau of Indian Affairs
Northern Cheyenne Agency
Lame Deer, Montana

David A. Sprynezynatyk
North Dakota State Water Comm.
Bismarck, North Dakota

Karl Starch
Bureau of Mines
Denver, Colorado

James St. Claire
Dept. of Agricultural Eco.
Laramie, Wyoming

Robert M. Stell, Economist
Lakewood, Colorado

Roger Steinberg
Ag. Extension Service-
Dept. of Biology
South Dakota State University
Brookings, South Dakota

Wayne Stephens
Bureau of Indian Affairs
Billings, Montana

Alice Sterling
Institute for Social Science
Research
University of Montana
Missoula, Montana

Stan Stevens
Crow Agency, Montana

David Stewart, Chairman
Crow Tribal Council
Crow Agency, Montana

Thomas F. Stinson
USDA-ERS-EDD
St. Paul, Minnesota

Jerald Stroebele
U.S. Fish and Wildlife Service
Billings, Montana

Roger W. Strohbehn
USDA-ERS-NRED
Washington, D.C.

Allan W. Strokes, Jr.
Colorado Open Space Council
Denver, Colorado

Richard Stroup
Dept. of Agricultural Eco.
and Eco.
Montana State University
Bozeman, Montana

Harold Strove
Basin Electric Power Company
Bismarck, North Dakota

Richard G. Stuby
USDA-ERS-EDD
Washington, D.C.

Gene F. Summers, Director
Center of Applied Sociology
Department of Rural Sociology
University of Wisconsin
Madison, Wisconsin

Sol Swerdloff
U.S. Department of Labor-BLS
Arlington, Virginia

Gordon Taylor
Environmental Protection Agency
Columbia, Maryland

June Thompson
Bismarck, North Dakota

Larry Tombaugh
National Science Foundation
Washington, D.C.

Leland Tond
Wolf Point, Montana

David R. Torkelson
Business and Industrial Dev.
Dept.
Bismarck, North Dakota

Stuart Townsend
Dept. of Agricultural Eco.
and Eco.
Montana State University
Bozeman, Montana

Robert L. Tresler
Soil Conservation Service
Casper, Wyoming

Robert Turner
Office of Economic Opportunity
Denver, Colorado

David VanDerburgh
Regional Director, OEO
Denver, Colorado

Margaret Veimillian
Northern Plains Resource
Council
Billings, Montana

Robert L. Vertrees
Department of Economics
South Dakota State University
Brookings, South Dakota

Stanley W. Voelker
USDA-ERS-EDD
Fargo, North Dakota

Arthur J. Walrath
Dept. of Agricultural Eco.
Virginia Polytechnic Inst.
Blacksburg, Virginia

Charles Wambolt
Cooperative Extension Service
Montana State University
Bozeman, Montana

Curt Warner
Employment Security Comm.
Helena, Montana

Robert Weiss
South Dakota State Capital
Pierre, South Dakota

Ralph Wells
Tribal Council
Fort Berthole Reservation
New Town, North Dakota

Doss White
Bureau of Mines
Denver, Colorado

Frank White Head
Bureau of Indian Affairs
New Town, North Dakota

Chaske F. Wicks
Standing Rock Sioux Tribe
Fort Yates, North Dakota

Gary Wicks, Head
Dept. of Natural Resources
and Con.
Helena, Montana

Fedrick A. Will
Office of Ass't Secretary for
Community & Field Services
U.S. Dept. of HEW
Washington, D.C.

Richard Winter
Bureau of Land Management
Wyoming State Office
Cheyenne, Wyoming

Ellen Withers
Northern Plains Resource
Council
Billings, Montana

Warren Wood
Old West Regional Commission
Silver Spring, Maryland

Robert Wrinkle
Environmental Protection
Agency
Arlington, Virginia

Lymann Yound
Tribal Council
Fort Belknap, Montana

Dudley E. Young
Bureau of Labor Statistics
U.S. Dept. of Labor
Washington, D.C.

Edwin Zaidlicz
Bureau of Land Management
Billings, Montana

Micheal E. Zainhofsky
Office of Economic Opportunity
Bismarck, North Dakota

Discussion Draft
NGPRP 6/74

SOCIO-ECONOMIC AND CULTURAL ASPECTS OF POTENTIAL COAL DEVELOPMENT IN THE NORTHERN GREAT PLAINS

SUMMARY

Statement of the Problem

America's demand for energy has been increasing at an alarming rate. With the Arab oil embargo and the ensuing uncertainty over the reliability of foreign supply, the question of energy has become more real and more urgent. Policymakers now face the dilemma of trying to balance public desire for more and cheaper energy with public concern over environmental quality.

Given present technology, the Nation is highly dependent upon fossil fuels for energy production; the most abundant fossil fuel is coal. In the past, most of the coal mined in the United States has come from the East, but recently attention has shifted to the American West, especially the Northern Great Plains area, which is underlain by vast deposits of easily mined, low-sulfur coal. Massive development of these coal resources seems imminent.

Such development will mean unprecedented population growth, both in magnitude and the speed with which it will occur. This is a decided departure from the long-term trend of population decline in many counties in the region. To compound the problem, this growth is likely to be unevenly distributed. Large, short-term fluctuations in population can be expected during the construction of coal conversion plants. In addition, population growth will not be spread evenly over the entire region. Instead, it will be concentrated in geographic "pockets" of development.

It is perhaps difficult to visualize what all this means. A person living in Chicago would hardly notice an influx of 750 to 1,000 people. However, in the Northern Great Plains, such an influx could easily double or triple the population of an entire town, an event which the inhabitants of the town could scarcely ignore.

Implications of Coal Development

It is apparent that rapid coal development has some potentially large and far-reaching social, economic, and cultural implications for the Northern Great Plains. Among the most serious are:

(1) Coal development may cause disruptions in other sectors of the economy. The energy sector is expected to offer higher wages than such sectors as agriculture and service. If labor supply is tight, competition among these sectors could effect a number of changes in the existing economy of the region.

(2) One of the problems with much of the economy of the Northern Great Plains region is its dependence on one or two primary industries. There has been some concern that the effects of coal development on other sectors of the economy could conceivably reduce this primary base to one. This has especially serious implications when one considers that the long-term future of coal development cannot be forseen with any certainty. Long-term stability will depend mainly upon national demand for western coal, which could be radically altered by changes in energy price structure such as would accompany the development of new energy technologies.

(3) In the past, rural people have neither needed nor supported elaborate planning and public service delivery mechanisms. However, the rapid population influx associated with coal development will

place severe strains upon service delivery systems in both the governmental and non-governmental sectors. In many cases, lead times will be short and community decisionmakers may find themselves in a position where they must make decisions without adequate information.

(4) One effect of development will undoubtedly be the extension of the extra-local controls of our urban and national systems. As population increases, new demands will be placed upon governments at all levels to expand services and generally widen the range and scope of their activities and authority. In addition, many communities will be subject to decisions made by the coal companies which may have a national rather than a local perspective. The resulting loss of local autonomy can have serious implications for residents who may feel they are losing control over the important decisions affecting their lives.

(5) Due to the complex nature of coal development, it is extremely difficult to estimate its cumulative effects. However, these effects may be critically important. Is the impact of two mines or power plants in the same area twice as great as the impact of one, or is it larger? Furthermore, how adaptable is the socio-economic environment? Do equal increments of change require equal adjustments on the part of environmental elements, or do they require successively more? It is quite possible that the impact of coal development in the Northern Great Plains may be greater than the projection and analytic techniques used in this report have been able to delineate.

Findings

The following represent the major findings of the Socio-Economic and Cultural Aspects Work Group of the Northern Great Plains Resources Program:

(1) The population increases attributable to coal development will be large when compared to the size of existing populations. To compound this, these increases will be both rapid and unevenly distributed.

(2) Most of the communities in the impact area are small and many have faced decline in past years. Probably the single most important factor in the small town situation is the lack of human resources. Community services are very limited due, in part, to the fact that often there is no one with the interest and/or expertise to provide leadership in many areas of local concern. For this and other reasons, most of the communities in the Northern Great Plains are not prepared to deal with the magnitude of change attending rapid coal development.

(3) Many people in the Northern Great Plains region do not appear to realize the potential magnitude of coal development and attendant impacts. These include not only private citizens, but also providers of both governmental and non-governmental services.

(4) The rapid influx of population will increase demand for services out of proportion to its size. At present, newcomers to the area are not satisfied with existing services. Many have come from more densely populated areas where more services are available to them and they appear to expect the same in their new surroundings. The service preferences of immigrants have not really been determined, but it is certain that these people will demand both a higher level

and a wider variety of services. To compound the problem, it is likely that many services which were once provided on an informal, person-to-person basis will have to be provided on a more formal level by government and non-government service systems.

(5) Public service requirements will increase at a much faster rate than revenue collection, especially in the early years of development. This will present problems for local governments, many of which already face financial strains, as they try to provide needed services within the constraints of very limited budgets.

(6) There are three service areas of particular concern: housing, health care, and education. Housing is already in short supply. High interest rates and shortages of building materials and labor would seem to indicate that the problem will worsen. There is an additional problem in providing housing for a construction population which will be larger than that resident during the operations phase. Health care is already marginal in many areas in the Northern Great Plains. Doctors are in short supply and many people must travel great distances to secure their services. The problem will be compounded with a rapid influx in population. Local school systems are also expected to experience severe stress in responding to rapid population increases. It is quite possible that service systems will be overbuilt in response to the construction boom and then left with excess capacity later, placing an additional strain on the community.

(7) People in the Northern Great Plains region appear to be very concerned about the loss of local autonomy. Nearly all who think their lives are being significantly impacted by coal development want the right to have a say in the decisions which will affect them.

(8) It is difficult to generalize about the position of the Indians concerning coal development. Tribal attitudes are extremely diverse, both within the separate tribes as well as among them. Probably the one central issue is self-determination: the right of these Indians to control what happens to them and their lands.

Recommendations

The following represent the recommendations of the Socio-Economic Work Group for potential solutions to some of the major problems of coal development. The list is by no means exhaustive or all-inclusive. It should be noted that these recommendations are the opinions of the people who have prepared this report and do not in any way represent official policy.

(1) Governments and government agencies at all levels can greatly affect coal development and associated impacts. These entities should examine their positions and attempt to define their responsibilities and policies in this area. For example, Federal energy policy, the National Environmental Protection Act, and Federal coal leasing policies have all contributed to the increased interest in western coal. At the State level, taxation and environmental quality legislation can significantly alter coal development through changes in relative prices. Such things as local land use policies can also effectively channel patterns of development. It is important these and other aspects of development and regulation be examined and co-ordinated as they will ultimately affect the impacts of coal development.

(2) If development is to proceed in a manner acceptable to local

people, these people must be involved in decision-making. To this end, it is recommended that Coal Awareness Committees be formed to act as information and advisory bodies. This is probably best accomplished at the local level. However, in some instances, the states may have to take the lead and aid the localities in getting started.

(3) State and Federal governments should examine the extent of their responsibility to local impact areas. It is felt that in many instances these entities must assume responsibility for helping communities to deal with what are essentially local problems. It is recommended, for example, that the concept of federally impacted areas be extended to include those areas which are impacted as a result of Federal energy policy. This would result in aid to localities for provision of public services, especially health, education, and housing.

(4) It is recommended that comprehensive planning boards be established to act as repositories for information concerning coal development. These boards would review application for coal mines, generating plants and gasification facilities. Knowledge of these plans by one group would facilitate the planning needed at all levels to minimize impacts of coal development.

(5) States and localities should jointly examine means to alleviate local service delivery problems, such as disparities in service demands and tax revenue collection. There are several possible solutions. For example, State agencies can loan funds or provide outright grants to affected localities for such items as education, public utilities, etc. The States may create new agencies, e.g., State housing finance

agencies such as created in South Dakota and proposed in Montana to make low interest loans available for development of housing for low and moderate income families. If deemed desirable, the States could enact legislation to provide accelerated or pre-payment of taxes by industry to enable counties to develop service capability as needed.

(6) In many cases, there are existing Federal programs which could provide funding for capital outlays for service facilities such as water, sewer, transportation, housing, etc. However, Federal paperwork is often confusing and officials in many communities may be overwhelmed. Thus, it is recommended that States provide information and technical assistance to localities to aid them in obtaining such funding.

Report Overview

The report which follows contains a summary of approximately twenty various individual studies conducted under the auspices of the Socio-Economic Work Group of the Northern Great Plains Resources Program. The document is intended to provide the reader with an overview of the information which has been gathered on socio-economic and cultural impacts of coal development in the Northern Great Plains. It is divided into six chapters:

Chapter I - Provides background information on the study area and defines the limiting assumptions under which the research was conducted.

Chapter II - Examines potential changes in population which can be attributed to alternative levels of coal development.

Chapter III - Discusses anticipated changes in life styles of local residents resulting from rapid population increases and the attendant acceleration of the urbanization process in the impacted areas.

Chapter IV - Examines some of the social and demographic changes which may occur in the life of the American Indian as a result of coal development. These are largely tied to the possibility that the Indian may become a minority on his own reservation.

Chapter V - Estimates the increased demands upon governmental service delivery systems which may occur as a result of rapid population increases. Discussion centers on the problems which may arise and the methods available to alleviate them.

Chapter VI - Discusses the anticipated effects of coal development upon non-governmental service agencies.

I. INTRODUCTION

This report attempts to summarize the socio-economic and cultural implications of three alternative levels of coal development in the Northern Great Plains. The report is drawn from 20 supporting documents prepared by members of the Socio-Economic and Cultural Aspects Work Group of the Northern Great Plains Resources Program. These documents will be deposited in public repositories throughout the Northern Great Plains Region. Their abstracts appear in the references section of this report.

A great deal of useful information and analysis has been gathered by the Work Group. This report presents an overview of the major topics analyzed by the Work Group. An attempt has been made to outline the limitations of the analyses in this report, and to indicate areas where further research is needed.

The writers of this summary document are acutely aware of the difficulty of distilling 1,200 pages of material contained in the 20 support documents to the present brief volume. A great deal of very valuable material has been excluded. It is hoped that this summary volume will serve as a stimulus for the reader to go directly to the supporting documents in those areas in which he wishes more detail.*

The Study Area

The study area consists of 20 counties in eastern Montana, 51 counties in Nebraska, 28 counties in western North Dakota, 15 counties

---

*The material for the rest of this Introduction is based on the work of Dalsted, Leistritz, Hertsgaard (1974), and Graham (1973).

Preceding page blank

in western South Dakota, and 8 counties in northeastern Wyoming (Figure 1).* From this, selected counties were used for impact analyses. A frequently used grouping is designated "Impact Area" (Figure 2).* A detailed physical description of the area can be found in the Surface Resources Work Group Report and the Geology Work Group Report (NGPRP 1974). A profile of the area's past and present demographic and economic characteristics is presented in Dalsted, Leistritz, Hertsgaard (1974). A more detailed profile analysis is contained in Graham (1973).

In general, the study area can be characterized as rural and sparsely populated where the economy of the region has traditionally based on agriculture. Energy extraction, chiefly oil and gas, has also been important in some parts of the region, notably the Powder River Basin in Wyoming and the Williston Basin in North Dakota and Montana. Partly because employment in the agricultural sector has been declining, the area has experienced fairly persistent outmigration (Table 1).

Table 1--Net migration in the Northern Great Plains impact area, 1960-1970

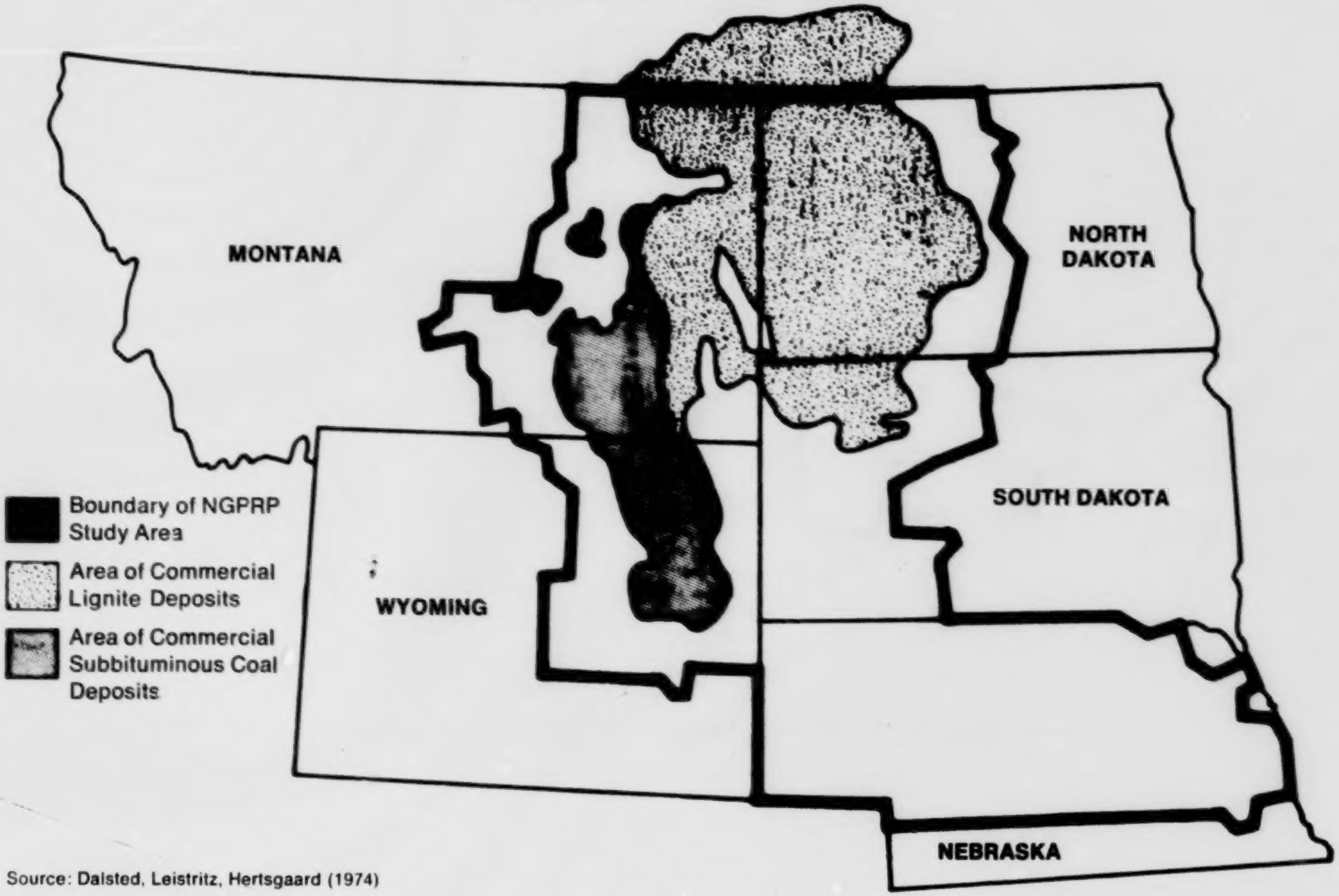
	1960-1970 (Number)	Rate of net migration (Percent)
Montana	- 8160	- 7.0
North Dakota	-26651	-17.4
Wyoming	- 6036	- 5.9

Source: Dalsted, Leistritz, Hertsgaard (1974).

---

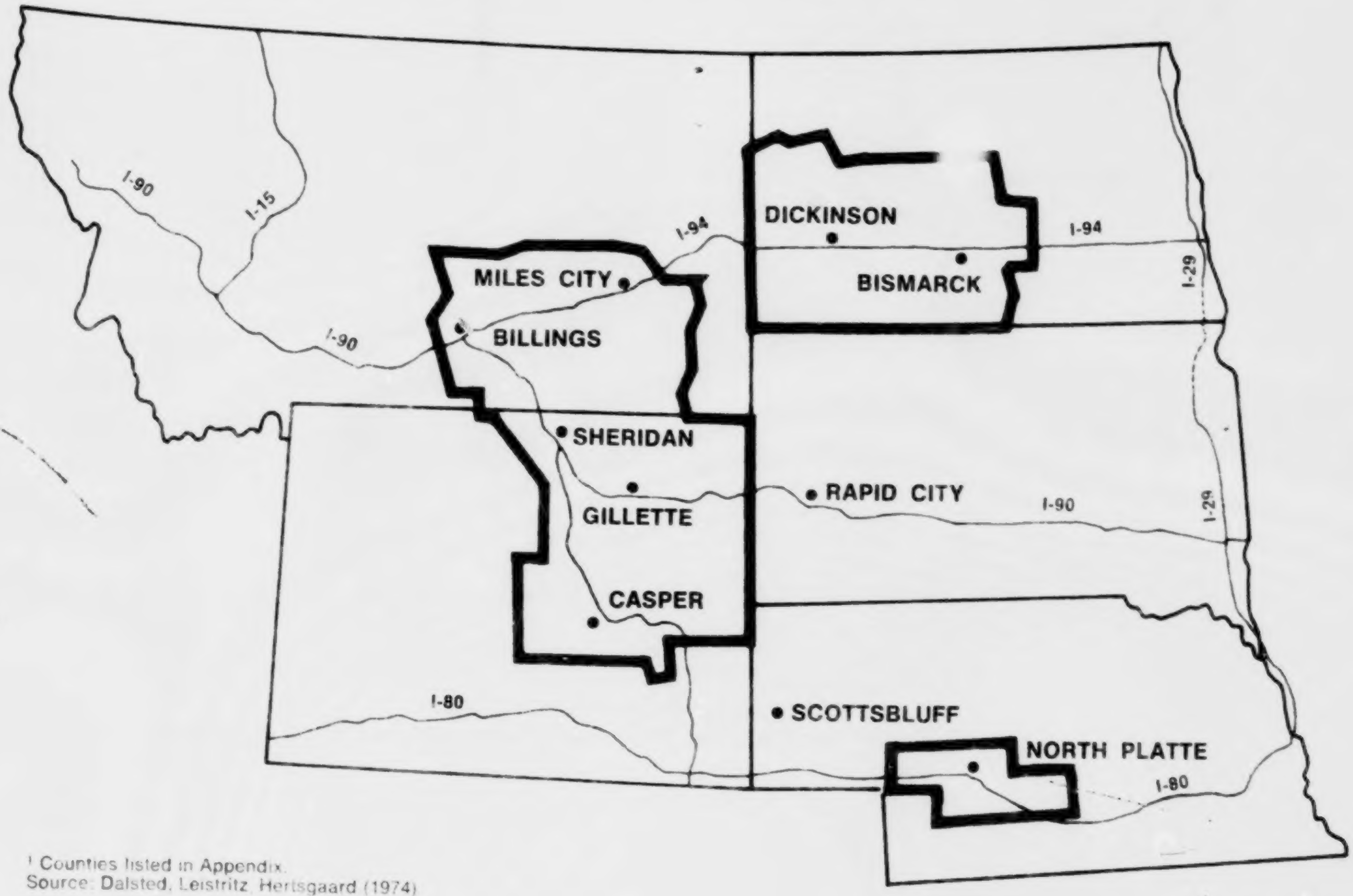
*See Appendix for a listing of the counties included.

FIGURE 1—Socio-Economic Work Group Study Area, and Location of Commercial Coal Deposits, Northern Great Plains States


MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
Boundary of NGPRP Study Area
Area of Commercial Lignite Deposits
Area of Commercial Subbituminous Coal Deposits

Source: Dalsted, Leistritz, Hertsgaard (1974)

FIGURE 2—Principal Impact Areas,[1] Northern Great Plains States


I-90
I-15
I-94
DICKINSON
I-94
I-29
MILES CITY
BISMARCK
BILLINGS
I-90
SHERIDAN
RAPID CITY
GILLETTE
I-90
I-29
CASPER
I-80
SCOTTSBLUFF
NORTH PLATTE
I-80

---

[1] Counties listed in Appendix.
Source: Dalsted, Leistritz, Hertsgaard (1974)

This outmigration has resulted in a population that has a lower proportion of people in the economically productive age groups of 25-55 than does the Nation as a whole.

The Scenarios

In order to provide a common basis for analysis, the Work Group adopted the alternative levels of development provided by the National Energy Considerations Work Group (NGPRP 1974).

Adopting this common framework was necessary in order to maintain internal consistency among the analyses being done by the Work Group. It also enhanced the analytic comparability of this Work Group Report with other NGPRP reports. Three alternative levels of energy development, or scenarios, were provided for analysis. The development alternatives consisted of projections of levels of production of all energy resources within the region. Since the plant and mine locations developed by the Minerals Resources Group pertained to coal-related facilities only, the analysis contained in this report deals only with coal-related development in the Northern Great Plains region.

Scenario I is defined as a projection sufficient to supply: (1) The future demand for coal within the region, (2) contracts for future out-of-State coal shipments presently in existence or being negotiated, and (3) other short-term, foreseeable demands. Scenario II is a "most probable" level of development in the sense that it is intented to reflect a future consistent with current trends and conditions. Scenario III is a "crisis" level of development, showing the effects that serious national shortfalls in imported oil and natural gas and delays in provision of nuclear generating capacity would have on the region's resources (Table 2). These levels of development were translated into numbers of facilities (e.g., power plants) by the Minerals Work Group (NCPRP 1974). The Minerals Work Group also selected possible sites for these facilities.*

The task of developing these scenarios was a very difficult one; time constraints imposed on the Work Groups concerned were severe. The following comments on the scenarios are meant to clarify our own analysis and not to criticize the work done by others. The timing, numbers, location, and types of coal processing facilities projected have been questioned by several members of the Work Group. For example, if Table 2 is carefully examined, it can be seen that electrical generation capacity remains constant between scenarios II and III, and that the additions to this capacity occur entirely in the 1985-2000 period. This is an example of problems with the scanarios which have caused some analysts to supplement the scenarios for their own analytical purposes.**

Furthermore, it is important to realize that the way in which the coal is processed and whether or not it is processed within the region has extremely important population implications for the region.

---

*For a detailed discussion of the location criteria, see Minerals Work Group Report (NCPRP 1974).

**Polzin (1974) departed from the electrical generation projections. Matson and Studer (1974) and Nebraska (1974) developed a "Scenario II-A" for their analyses, which they felt were more realistic. Bureau of Indian Affairs (1974) also developed some alternative projections for Indian reservations in their report.

Table 2.--Projected increase over 1972 facilities and capacities 1/

	1980			1985			2000		
	Number of additional mines	Additional electric generating plants	Additional synthetic gasification plants	Number of additional mines	Additional electric generating plants	Additional synthetic gasification plants	Number of additional mines	Additional electric generating plants	Additional synthetic gasification plants
	(Coal production: million tons per year)	(Capacity: megawatts)	(Capacity: million cubic feet per day)	(Coal production: million tons per year)	(Capacity: megawatts)	(Capacity: million cubic feet per day)	(Coal production: million tons per year)	(Capacity: megawatts	(Capacity: million cubic feet per day)
SCENARIO I:									
Montana	0 (32.9)	0 (0)	0 (0)	0 (32.9)	0 (0)	0 (0)	4 (32.9)	4 (4100)	0 (0)
North Dakota	0 (13.7)	0 (0)	0 (0)	0 (13.7)	0 (0)	0 (0)	1 (13.7)	1 (1200)	0 (0)
Wyoming	2 (24.5)	0 (330)	0 (0)	2 (24.5)	0 (330)	0 (0)	2 (24.5)	1 (1530)	0 (0)
Nebraska	0 (0)	1 (650)	0 (0)	0 (0)	1 (650)	0 (0)	0 (0)	1 (650)	0 (0)
Total	2 (71.1)	1 (980)	0 (0)	2 (71.1)	1 (980)	0 (0)	8 (71.1)	7 (7480)	0 (0)
SCENARIO II:									
Montana	0 (37.3)	0 (0)	0 (0)	5 (72.1)	0 (0)	3 (750)	17 (130.8)	4 (4100)	6 (1500)
North Dakota	0 (12.9)	0 (0)	0 (0)	3 (36.0)	0 (0)	2 (500)	17 (129.2)	6 (7500)	7 (1750)
Wyoming	2 (30.7)	0 (330)	0 (0)	4 (42.2)	0 (330)	2 (500)	10 (73.6)	1 (1530)	3 (750)
Nebraska	0 (0)	1 (650)	0 (0)	0 (0)	2 (850)	0 (0)	0 (0)	2 (850)	0 (0)
Total	2 (80.9)	1 (980)	0 (0)	12 (150.3)	2 (1180)	7 (1750)	44 (333.6)	13 (13980)	16 (4000)
SCENARIO III:									
Montana	4 (60.1)	0 (0)	3 (750)	14 (148.8)	0 (0)	8 (2000)	40 (389.8)	4 (4100)	15 (3750)
North Dakota	4 (53.9)	0 (0)	4 (1000)	7 (77.6)	0 (0)	6 (1500)	25 (239.5)	6 (7500)	17 (4250)
Wyoming	2 (30.7)	1 (330)	0 (0)	12 (131.1)	0 (330)	6 (1500)	35 (351.5)	1 (1530)	9 (2250)
Nebraska	0 (0)	1 (650)	0 (0)	0 (0)	2 (850)	0 (0)	0 (0)	0 (0)	0 (0)
Total	10 (144.7)	2 (980)	7 (1750)	33 (357.5)	2 (1180)	20 (5000)	100 (980.8)	11 (13130)	41 (10250)

1/ The number of new facilities is shown above the line, the increase in sector capacity is shown below the line. For example, Column 1 in Scenario III shows that 4 new mines are projected for Montana and that total coal production has increased by 60.1 million tons since 1972.

Source: Minerals Work Group Report (NGPRP, 1974)

Coal gasification and liquification are far more labor intensive processes than is electrical power generation (Table 3). The exact number of employees associated with each process is still a matter of considerable debate among various researchers in the field; the point to notice is the magnitude of the differences involved. The implications of different proportions of the coal produced in the region being processed in the region become clear if one analyzes the consequences that varying this proportion has for population.

Table 3--Estimated employment associated with coal development activities

Employment	250 million cubic feet per day coal gasification plant[2]	1200 megawatt electric generation plant[3]	5 million tons per year coal mine
Permanent	800	110	200
Construction[1]	4,000	3,000	100

1/ Peak construction force.
2/ Lurgi process; does not include associated coal mine employment.
3/ Does not include associated coal mine employment.

Source: Private industry data supplied by Wyoming DEPAD.

A brief analysis of the Wyoming data for Scenarios II and III for the year 2000 was undertaken. It was found that if the ratio of coal extracted to coal processed in the region for 1980 was held constant for the year 2000, the population estimate increased from 238,000 to nearly 400,000.

The important point to be made about all the alternatives used is that they provide a framework for analyzing the social, economic, and cultural impacts of various levels of development. They are not forecasts; they do not try to predict the future, but are used to answer the question of "What will be the result _if_ this or that level of development takes place?"

Before leaving this brief discussion of the framework of our analysis, it may be useful to discuss one other aspect of the applicability of the scenarios to our work. Many of the subjects analyzed by this Work Group are difficult to quantify precisely. Some of the study writers were not able to differentiate the impact of the various scenarios on their subject area. In some cases it was only possible to make a generalized statement that development of the magnitude foreseen in any of the scenarios would have an important impact.

II. POTENTIAL POPULATION CHANGE*

Population Models

The analytical models employed in Montana, Nebraska, North Dakota, and Wyoming which evaluated the economic impacts of alternative levels of energy development differed somewhat. The methodology used in North Dakota involved estimating local expenditures for plant construction and plant operation in the years 1980, 1985, and 2000 for each of the three scenarios. These expenditures were then applied to North Dakota input-output interdependence coefficients for the appropriate economic sectors. This procedure provided estimates of the gross business volume generated in all sectors by these expenditures. These gross business volumes (which reflect both direct and indirect effects of expanded economic activity) were then translated to resulting changes in employment by dividing the estimated gross business volume by output per worker ratios (gross business volume per worker). Finally, the resulting estimates of increased employment were then converted to estimated population changes by applying population/employment ratios to the estimated employment.

The analyses conducted in Wyoming, Montana, and Nebraska were based on models involving the ratio of basic employment to secondary employment. The Wyoming study applied these ratios to

---

*The material for this section is based on the work of Polzin (1974), Matson and Studer (1974), Dalsted, Leistritz, Hertsgaard (1974), Dalsted and others (1974), Bureau of Reclamation (1974), and Nebraska (1974).

Preceding page blank

estimated direct employment in coal-based industries for the years 1980, 1985, and 2000 for each of the three scenarios. This procedure provided estimates of total employment, by industry and by year, for the principal impact area. These estimates were translated to estimates of total population in the area. Estimates for the area were disaggregated to provide county-level estimates of population and employment in each year for each scenario.

Direct and Indirect Employment. Direct and indirect employment estimates associated with energy development were derived from these models (Table 4). It should be noted that the methodologies employed resulted in some rather large differences in the relationship between direct and indirect employment changes. North Dakota and Nebraska estimates of this relationship differ appreciably from those of Montana and Wyoming.

Total Employment. Changes in total employment which would occur under each scenario were estimated (Table 5). This table takes into account employment changes in all sectors of the economy, not just the energy sector.

Population Projection. The impact of the three scenarios on population in the Northern Great Plains region were developed (Table 6). Population growth ranges from 15 percent for the 1970-2000 period under Scenario I to over 100 percent under Scenario III. The population growth implied by all of the scenarios, but especially II and III, are in sharp contrast to the recent demographic history of the region, which grew by only 1 percent in the 1960-70 period.

Table 4--Employment related to coal development, scenarios I, II, and III.

State impact area	Scenario I			Scenario II			Scenario III		
	1980	1985	2000	1980	1985	2000	1980	1985	2000
	- - - - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -	Numbers	- - - - - - - -	- - - - - - - -	- - - - - - - -	- - - - - - - -
Montana:									
Direct operating	1,031	1,041	1,727	1,113	4,034	5,551	3,799	7,058	14,327
Average construction	1,348	0	1,003	1,359	3,435	1,047	4,187	2,506	1,989
Total direct	2,379	1,041	2,730	2,472	7,469	6,598	7,986	9,564	16,316
Indirect	6,922	2,998	7,371	7,194	20,316	16,824	22,201	26,492	40,464
Total	9,301	4,039	10,101	9,666	27,785	23,422	30,187	36,056	56,780
Ratio 1/	2.91	2.88	2.70	2.91	2.72	2.55	2.78	2.77	2.48
North Dakota:									
Direct operating	699	708	995	708	2,888	9,652	4,932	7,250	21,443
Average construction	1,101	0	297	1,101	2,288	3,746	4,901	2,290	6,033
Total direct	1,800	708	1,292	1,809	5,176	13,398	9,833	9,540	27,476
Indirect	1,854	465	1,689	2,583	7,782	24,661	25,640	8,281	37,993
Total	3,654	1,173	2,981	4,392	12,958	38,059	35,473	17,821	65,469
Ratio 1/	1.03	0.66	1.31	1.43	1.50	1.84	2.61	0.87	1.38
Wyoming:									
Direct operating	630	640	860	800	2,390	3,820	800	7,060	14,550
Average construction	260	200	0	1,690	1,150	0	4,900	3,340	0
Total direct	890	840	860	2,490	3,540	3,820	5,700	10,400	14,550
Indirect	2,360	2,380	2,590	6,360	9,390	11,590	12,450	24,160	20,090
Total	3,250	3,220	3,450	8,850	12,930	15,410	18,150	34,560	54,640
Ratio 1/	2.65	2.83	3.01	2.55	2.65	3.03	2.18	2.32	2.76
Nebraska:									
Direct operating	75	75	75	75	75	115	75	75	115
Average construction	--	--	--	--	--	--	--	--	--
Total direct	75	75	75	75	75	115	75	75	115
Indirect	150	150	150	150	150	230	150	150	230
Total	225	225	225	225	225	345	225	225	345
Ratio 1/	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95

1/ Ratio of indirect to direct employment.
-- = Data not available.

Source: Dalsted, Leistritz, Hertsgoard (1974), and Nebraska State Office of Planning and Programming (1974).

Table 5--Total employment projections for 1980, 1985, and 2000, by State impact areas, scenarios I, II, and III

	1960	1970	1980	1985	2000
Scenario I:					
Montana 1/	42,029	46,297	51,000	53,000	59,000
North Dakota	52,436	52,112	59,000	56,000	63,000
Wyoming	38,519	41,897	48,000	51,000	54,000
Nebraska 2/	20,430	22,497	26,000	27,000	29,000
Total	153,414	162,803	3/184,000	3/186,000	3/204,000
Scenario II:					
Montana 1/	42,029	46,297	52,000	62,000	76,000
North Dakota	52,436	52,112	59,000	66,000	95,000
Wyoming	38,519	41,897	52,000	59,000	67,000
Nebraska 2/	20,430	22,497	26,000	27,000	29,000
Total	153,414	162,803	3/188,000	3/214,000	3/267,000
Scenario III:					
Montana 1/	42,029	46,297	60,000	79,000	112,000
North Dakota	52,436	52,112	80,000	74,000	123,000
Wyoming	38,519	41,897	57,000	78,000	104,000
Nebraska 2/	20,430	22,497	26,000	27,000	29,000
Total	153,414	162,803	3/224,000	3/259,000	3/369,000

1/ Montana figures do not include construction employment and associated service employment.

2/ Scenarios II and III projected identical levels of development in Nebraska.

3/ May not add due to rounding.

Source: Dalsted, Leistritz, Hertsgaard (1974).

Table 6--Total population projections for 1980, 1985, and 2000, by State impact areas, scenarios I, II, and III

	1960	1970	1980	1985	2000
Scenario I:					
Montana 1/	117,155	123,295	129,000	135,000	146,000
North Dakota	152,788	146,816	159,000	145,000	160,000
Wyoming	102,684	107,364	124,000	128,000	132,000
Nebraska 2/	55,854	57,492	61,000	62,000	65,000
Total	428,481	434,967	3/474,000	3/470,000	3/503,000
Scenario II:					
Montana 1/	117,155	123,295	131,000	147,000	176,000
North Dakota	152,788	146,816	159,000	176,000	242,000
Wyoming	102,684	107,364	131,000	145,000	160,000
Nebraska 2/	55,854	57,492	61,000	62,000	65,000
Total	428,481	434,967	3/481,000	3/530,000	3/643,000
Scenario III:					
Montana 1/	117,155	123,295	142,000	183,000	251,000
North Dakota	152,788	146,816	217,000	196,000	314,000
Wyoming	102,684	107,364	140,000	181,000	239,000
Nebraska 2/	55,854	57,492	61,000	67,000	76,000
Total	428,481	434,967	3/560,000	3/627,000	3/879,000

1/ Montana figures do not include population associated with construction employment.

2/ Scenarios II and III projected identical levels of developments in Nebraska.

3/ May not add due to rounding.

Source: Dalsted, Leistritz, Hertsgaard (1974).

Population Effects

Net Migration. One of the chief problems associated with growth of the size and pace postulated in the foregoing tables will be that of labor supply. Some analysts have indicated there is little surplus labor available in the region. "Analysis of the income, earnings and unemployment prevailing in the Powder River Basin in Wyoming does not indicate the existence of any substantial pool of readily available labor. It must be concluded that the bulk of new labor must either be bid away from existing activities or else hired from outside the area" (Matson and Studer, 1974, p. 141). They conclude that substantial inmigration will, therefore, be necessary if the supply of labor is to be in balance with the demand. Polzin (1974), however, supplies very different projections of net migration for Montana (Table 7). The radical differences are due to differing assumptions about the extent of employment of women and young people. Both sets of assumptions appear equally reasonable. The existing surplus labor pool in the Montana impact area appears to be larger than the pool in the Wyoming area. It is important to note, however, that a relatively small change in assumptions in the labor force participation rate leads to rather large differences in levels of net migration.

Migration as described in Table 7 refers to net migration. It does not necessarily reflect the number of new residents that would move into the region; present residents could leave and be replaced by an equal number of people from outside the regions, which would show up as zero net migration. It should be noted that almost nothing is known about the prospective new residents of the region. Where they will come from, what their socio-economic characteristics will be, and how often they will move are among the questions that still need to be answered. The socio-economic characteristics of the new residents is of particular importance, since family size, age of children, and other factors have important effects on the kinds of services they will demand.

Table 7--Net migration in Montana 1/ and Wyoming 2/ impact areas 3/

	1960-70	1970-80
Scenario I:		
Montana	-8,160	-8,046
Wyoming	-6,036	5,592
Scenario II:		
Montana	-8,160	-6,800
Wyoming	-6,036	11,892
Scenario III:		
Montana	-8,160	3,884
Wyoming	-6,036	20,862

1/ Includes Big Horn, Custer, Musselshell, Power River, Rosebud, Treasure, and Yellowstone Counties.
2/ Includes Campbell, Converse, Crook, Johnson, Natrona, Niobrara, Sheridan, and Weston Counties.
3/ No estimates of net migration were made by the authors of the North Dakota and Nebraska economic impact reports.

Source: Dalsted, Leistritz, Hertsgaard (1974), and Matson and Studer (1974).

Labor Supply. A serious question raised by some analysts has been whether the supply of labor will, even with inmigration, be sufficient to fill demand. It can be argued, for example, that coal-related employment will pay wages higher than the prevailing wages in other sectors. Labor could be bid away from these sectors by coal-related developments. This will be particularly critical to the agricultural and service sectors of the economy. Traditionally, these sectors have not been able to pay the level of wages that energy companies anticipate paying. It may be difficult for them to compete in the future labor market. Substantial substitution of capital for labor may be necessary in these sectors. It must be stressed that further empirical research is needed. Chronic labor shortages do, however, appear to be a reasonable possibility on a priori grounds.*

At present, per capita money income is generally lower than the U.S. average (Table 8). It is expected that income levels will show significant changes as a result of coal development. These increases will be necessary to attract workers from other regions. The earnings distribution of a coal gasification plant (using 1972 figures) was compared with the 1969 earnings distribution in Mercer County, North Dakota, one of the principal impact areas (Table 9). Although the comparison is between 1969 and 1972 dollars, it nevertheless shows the contrast between existing wage levels and those that will likely be paid by the energy companies. Average annual earnings by a gasification plant worker may be nearly double the earnings of noncoal industry workers. Measured in 1972 dollars, they are in the $12,500-$13,500 range for workers in either gasification plants, power plants, or coal mines.

---

*For further discussion, see Matson and Studer 1974, pp. 131-139 and pp. 144-145 and Dalsted, Leistritz, Hertsgaard 1974, pp. 62-64.

Table 8--Per capita money income for Montana, Nebraska, North Dakota, Wyoming, and impact areas, as percent of U.S. income, 1970

State	Whole State		Impact counties	
	Per capita money income	Percent of United States	Per capita money income	Percent of United States
Montana	$2,696	86.4	$2,729	87.5
Nebraska	2,797	89.7	2,691	86.3
North Dakota	2,469	79.2	2,315	74.2
Wyoming	2,895	92.8	3,143	100.8
Weighted average, four States	2,720	87.2	2,687	86.1
United States	3,119	100.0	3,119	100.0

Source: Dalsted, Leistritz, Hertsgaard (1974).

Table 9--Earnings distribution of a typical coal gasification plant and of Mercer County, North Dakota male workers

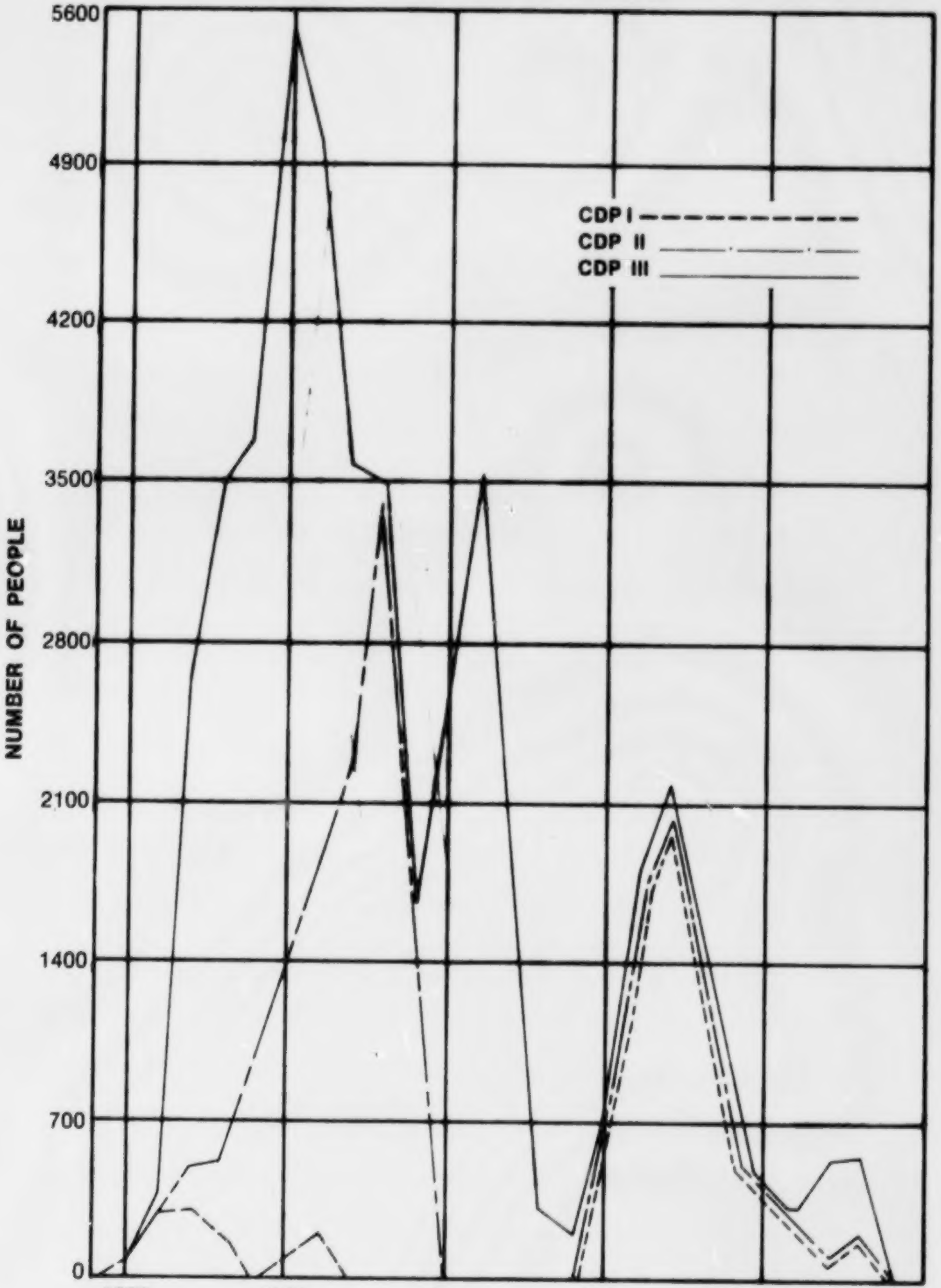
Earnings	Typical gasification plant (1972 Dollars)	Mercer County male workers (1969 Dollars) 1/
Less than $6,000	0.0	56.1
$6,000 to $7,999	3.8	18.0
$8,000 to $9,999	48.7	14.4
$10,000 to $14,999	41.0	8.6
$15,000 to $24,999	6.4	2.3
$25,000 and over	0.1	0.5
Average annual earnings	12,630	5,792

1/ There is some distortion in these figures. Inflation has made a dollar worth less in 1972 than in 1969. However, these distributions cannot be adjusted because the raw data used to generate the percentages are not available.

Source: Dalsted, Leistritz, Hertsgaard (1974).

Population Stability. Rapid development of the kind foreseen in this region also poses a question about the stability of the population. Some facilities contained in the scenarios, notably coal gasification plants and electrical generating plants, require very large construction forces. For example, a Bureau of Reclamation study (1974), projecting construction force levels on a year-by-year basis for Campbell County, Wyoming, showed wide fluctuations over the years under any of the three scenarios (Figure 3).

FIGURE 3—Estimated Annual Average Construction Employment during Construction of Facilities for Mining, Electrical Plants, and Gasification Plants, Campbell County, Wyoming, 1975-2000



SOURCE: BUREAU OF RECLAMATION (1974)

Fluctuations of this magnitude would cause very substantial short-term population variations in the immediate local areas where the facility was being built.

However, whether or not these fluctuations would actually come about is open to question. There is some reason to believe that there will be sequential construction projects going on in the impact areas. This could allow construction workers to live in the general area on a permanent basis, following the construction work as it becomes available. Such a pool of construction workers would be equivalent to new permanent workers in their effect on the economies of the local areas. In sum, the extent of short-term local fluctuations in population is a question still to be resolved.

The long-term stability of the population is another important area of concern. The three scenarios developed for analysis do not imply a decline in population in any of the impact areas for the overall period of 1970-2000. It should be noted, however, that the scenarios do imply an increasing economic dependence on coal. It can be reasoned, therefore, that the long-term stability of the region will depend on the stability of the demand for Northern Great Plains coal. Further, to the extent that the economic base of the region becomes increasingly concentrated in one sector, the potential of economic fluctuation increases. Although not envisioned in the scenarios, the possibility of substantial economic diversification resulting from coal development has frequently been mentioned by other analysts. Their reasoning is that the availability of dependable electrical power and petrochemical byproducts of coal gasification and liquification may lead to another round of industrial growth. It would seem reasonable that such diversification would tend to make the region's economy more stable. This second round of industrial growth was not included in any of the scenarios analyzed in this report. To the extent that it occurs, the projections in this report would be underestimated.

The Spatial Impact

In considering the impact of the developments contained in the scenarios, it is important to realize that population growth will not be evenly spread over the entire Northern Great Plains. On the contrary, some subregions will experience far more rapid growth than others. For example, the population in Campbell County, Wyoming, might increase 131 percent in the 1970-2000 period under Scenario II. Niobrara County, its neighbor to the east, might have a decline of 15 percent. This pattern of highly concentrated impact is generally true of all of the study areas. In general, this concentrated impact will intensify the impact of rapid population growth.

This is not to say, however, that there will not be important regional effects of population pressure. The Rocky Mountains on the western edge of the region and the Black Hills in northwest South Dakota will certainly feel the impact of accelerated recreation development from the increased population in the area.

Another aspect of the spatial pattern of population impact is the question of settlement patterns. This question has important implications. The costs of providing services can be expected to vary significantly, depending on the pattern of settlement. For example, the costs for school bus transportation would be lower if growth occurs in established towns rather than in a highway strip between these towns and a coal development site. Higher costs could also be expected for other services, such as fire protection, police protection, and ambulance services.

Further Research Needs

Some of the fields for further research were mentioned earlier. They are discussed in more detail below.

1. The population growth described in this report poses substantial challenges to the provision of housing and public services. The way in which these challenges are met will be extremely important in determining the living environment for residents of the Northern Great Plains for many years to come. Generally speaking, the work summarized in this report does not address itself to solving these problems.
2. The labor supply discussed above is an important area of concern. Directly related to this problem is the question of levels of inmigration and outmigration. What effect will economic growth have on the migration patterns of the young people in the region? Much more research needs to be done in this field.

3. Labor supply and migration levels are interrelated with income levels. Obviously, one way to increase the supply of labor is to increase the price offered for it. Current research on interregional migration usually indicates that the rate of in-migration into an area depends to an important degree on the relative wages, after adjusting for differences in the cost of living. It seems clear that living costs--notably for housing--will rise markedly in the impacted areas in coming years. Migrants will expect wages high enough to cover these costs and still give them the incentive to move.
4. The nature of the eventual change in the settlement pattern largely depends on the extent to which public planning agencies come to grips with the housing problems associated with the growth of energy activities. Unfortunately, this is another field where far too little research is underway. In the long run, the housing of workers may be the most important environmental decision made in the Northern Great Plains.
5. Much uncertainty remains regarding the impact of potential energy development on the settlement patterns of the Northern Great Plains region. The existing pattern is dominated by the importance of the county seat town. Whether future urban growth will occur in these existing towns or in other places has not yet been determined.

The locations of potential impact in relation to existing communities is different for all the counties. Each community must assess its own special problems.

6. Finally, a specific need for analysis lies in the impact coal development will have on the transportation of grain by railroads.

7. The competition for labor and changes in wage rates as a result of coal development will have a direct effect on other industries, including agriculture, petroleum, and service industries. The effects of coal development on other industry and the aggregate effect on the economy of the region requires analysis.

8. Alternative resource allocation decisions need study. From a regional standpoint, this involves the implications of alternative uses of water and alternative rural development routes--including deliberate isolation/minimum urbanization. From a national standpoint, the implications of regional rural development need to be placed into a national context. When considering alternative natural resource use this includes the relation of the use of the resources of one region as opposed to that of another, and present use versus future use, e.g. petrochemical reserves.

III. ANTICIPATED SOCIAL EFFECTS

One of the most difficult aspects to understand about development is its affect upon the people who live in the area. Social change is a very complex process. In addition, just as individuals are different, so are communities making it very difficult to generalize from place to place. Within the scope of the Northern Great Plains Resource Program, it has not been possible to analyze the entire area. Instead, various researchers have examined discreet aspects of development; the results are presented in this section as sketches of these aspects. It is hoped that these sketches will enable the reader to develop an understanding of the attitudes and feelings of those poeple living in areas where massive coal development may become a reality.

Urbanization of the NGP--A Typology

America is typically described as an urban Nation; a vast majority of the people live in urban areas. As more and more areas become urban, it is important to examine the process by which rural people become enmeshed in extra-community systems.*

---

* The following discussion is based on the work of Sam Carnes and H. Paul Friesema, "Urbanization and the Northern Great Plains" Essentially, this work is a review of relevant literature concerning the urbanization of rural areas. It is not site-specific to the Northern Great Plains. However, the information generated can be valuable as an analytic framework.

It is unlikely that any area in the United States is so remote and isolated that it is unaffected by events in the larger society. Electronic media transmit messages to the most remote areas of the country and have undoubtedly accelerated our movement towards a national society and a national culture.

This phenomenon is a manifestation of "urbanization." The term urbanization can mean different things; many scholars and laymen tend to think of it merely as an increase in population and population density. It seems more useful to think of urbanization as a process that can fundamentally change the way people relate to one another, with a movement away from the primary community towards a secondary community.

As one relates the phenomena of urbanization to the effect coal development will have on the social structure of the Northern Great Plains, the essential ingredient is time. Thus, although the Northern Great Plains is gradually becoming urbanized along with the rest of the Nation, coal development will accelerate urbanization.

Urbanization is not simply the growth of population. A town like Hardin, Montana, could become rapidly "urbanized" even without an increase in population, if, for example, the activities of the residents become increasingly tied into and dependent on decisions made in urban control centers such as Chicago and Washington, D.C.; if there was a rapid increase in the complexity of the division of labor; and if residents became far less oriented toward people and institutions in Hardin, as a community, and far more oriented to extra-community activities. The basic transformation of Hardin would probably be accompanied by rapid population growth, of course. But urbanization concerns the way in which the territorial community is socially organized; not the number people who live there.

Part of the price of industrial development is the extension of social controls of our urban and national system. Development almost always brings with it increases in population; this causes new demands on local governments to expand services, to arbitrate disputes, and generally to widen the range and scope of their levers of social control. In addition to the controls emanating from Federal, State and local governments, people are also subject to decisions of corporations that have branch plants in their communities. Decisions concerning employment criteria, job security, and the general operation of the plant may be made in corporate headquarters in New York or Chicago, rather than in the community itself. The net result of these activities in the Northern Great Plains area will include a decline in local autonomy, exposure to conflicting norms, and a fragmenting of the existing social order.

Effects on the Social Order.

The Individual: Urbanization, with its attendant processes of specialization and differentiation of interests, changing associations and increased interdependencies, will largely transform the individual's relationship with his neighbors and his city. This is neither to say that rural people are homogeneous nor that their towns function as tightly knit communities. There are differences. Nevertheless, there is still an appearance of similarity of interests and values, and inhabitants do characterize their communities as essentially "classless" and egalitarian. The residents share essential values and ideologies, and find comfort in the commonality.

When a community is faced with an intrusion of newcomers, its individual members are inevitably introduced to new values and new ideologies. As this new value system is being synthesized, the individual must change his source of dependence; he becomes absorbed into a larger national network. Dependence on a larger control system frees the individual from the pressures of his immediate surroundings, yet in no sense is he autonomous.

Typically, as social change occurs, people tend to long for the good old days. They experience a kind of homesickness for earlier times, when everybody in a community knew and trusted each other. Oldtimers wish that things could be the way they used to be, and newcomers initially wish they were back in their previous homes, towns, and communities. Newcomers perceive that not enough goods and services are available, compared to where they used to live and oldtimers complain that goods and services are not as good as before the newcomers came to town and messed things up.

The individual is not a total loser in a boom situation. Although he may suffer from a sense of uncertainty during the transitional period, his individual freedom may also increase.

It is, of course, a value judgment as to whether or not this increase in individual liberty is good or bad. (Russian novelist Dostoevski maintained that freedom confuses rather than liberates.) At any rate, whether or not the area is subjected to coal development, its inhabitants will probably have to eventually face the psychological problems of urbanization in the normal course of events.

The Family: The American rural family has traditionally been a strong one. Kinship and extended family ties are important. It provides a basis for economic cooperation and the sharing of activities. The family has been and is the primary agent of socialization and social control. For these rural families, particularly farmers and ranchers, home is more than the location of residence. They are apt to be very attached to their physical domain; their land is not merely valued as an investment. These families, however, are already being touched by urbanizing influences.

Urbanization tends to weaken family ties, and subsequently undermines the traditional social control of the rural community. The opportunity for offspring to seek employment in a nonagricultural industry lessens their dependence on the family. With the breakdown of family dependence, communities must take on increased responsibilities. Schools, churches, and governmental agencies such as social services and welfare boards provide services and controls that traditionally were handled within the family unit.

Urbanization also affects the family structure in that it separates one's workplace from his or her home, and consequently results in greater independence from family members. Friendship will be between individuals rather than between families. Husbands may become good friends because of working together but their wives may despise each other. School children develop friendships irrespective of race, ethnic background or geographical proximity of their homes.

Certainly, urbanization may have some positive effects on the family structure too. There will be greater individual freedom. The small community characteristic of knowing everything about one another will be replaced by a greater degree of personal privacy, if a family prefers it.

Industrialization of the Northern Great Plains may have contradictory consequences for the family. On the one hand, the number of jobs in the local area will increase, thereby offsetting the tendency for young people to leave the community in search of jobs. However, industrialization is also likely to spur the disintegration of the extended family, and although adult children may stay in the same geographic region, they may see their parents only infrequently.

A further effect of coal development on the family structure will be a change in the role and status of women. More services will be available in the community, which may give the wife or homemaker member of the household more free time. These services and new businesses will make more jobs available to women, which will tend to give them more weight in both economic and political factors.

Group and Sub-Culture Relations: Coal development will bring several new groups of people into the rural communities in impacted areas. Middle and lower-middle class blue-collar workers and their families, upper-middle and lower-upper class white collar technical personnel, plant managers, medical doctors, dentists, lawyers, and governmental agency representatives will all funnel into the hereto-fore small rural towns like Broadus, Zap, and Beula. With the new mixture of population, the social and political systems in communities will become increasingly complex, and social stratification may become more rather than less distinct. The natives will be watching their old friends and neighbors to see how they deal with newcomers, and new interpersonal relationships will appear.

Since history shows that social stratification occurs in all societies of the world, it will likely persist in the coal impact areas: in access to social and civic groups, in local leadership, and in housing. Patterns of residential segregation may become more pronounced. For instance, new families may find it necessary at first to locate according to physical availability of housing and convenience to place of work; later, they can move to a place considered more desirable because of the type of people who live there.

Rural Society: Some discussion must be given to the effect of urbanization on rural society as a whole and on community institutions as they presently exist. What will be the urbanization effects on the church as a social institution, on the role of mass media maintaining newly established communication networks, and on the level of crime and disorder?

With urbanization, the church is likely to lose its position as a leader of community opinion and become a follower instead. With a smaller percentage of the population regularly affiliating with the local church, its spiritual influence will be weakened. As the church becomes less influential in the lives of individuals and families, it can no longer enforce its moral codes and prevent antisocial behavior.

However, churches do appear to become economically stronger even as they become spiritually weaker. More social service programs proliferate, and the higher incomes of the new parishoners are reflected in higher levels of giving per family.

At present, the local rural newspaper is usually an organ for presenting local news and the local image. It may undergo change in response to the demands of its principal source of revenue--local businesses that communicate their services and prices through advertising. During early stages of urbanization, the local press will yield to the demands of advertisers, probably antagonizing the natives who find less local news and gossip and more advertising.

There is some empirical and theoretical evidence that industrialization and urbanization are highly correlated with rising crime and deviance from traditional social norms. As discussed earlier in the report, the effect of urbanization on the family structure and on the church as agents of social control partly explains why crimes increase with industrialization.

For small towns, one effect of coal development will be the need for additional law enforcement personnel. These new law officers may be newcomers, unfamiliar with the norms and the culture of the community, thus increasing the level of impersonalness between the police and the general public.

It seems safe to conclude that, with the coming of new types of people, the police, court systems, and social agencies will have their hands full with more crime and social deviance.

Shifts in the Power Structure

Rural political systems are moving toward integration with the national political system, due to the trend toward centralization of power in the Federal Government. Nevertheless, they still differ enough from urban political systems to warrant examination of the effect urbanization will have on them. The most distinguishing characteristic of rural political systems is the personalism that guides the way decisions are made, leaders are chosen, and policies are implemented. Small town governments are generally nonpartisan, with little if any formal political organization. Typically the job of mayor is "passed around" among the businessmen, who hassle with the minutia of seeing that taxes are collected and streets are repaired in the summer and kept free of snow in the winter.

The grassroots democracy usually attributed to small town politics is based on the concepts of personal loyalties and friendships. The ideology of small town America indicates that small towns are among the most egalitarian political and social systems to be found. As such, power elites do not exist, and all men and women participate, if only minimally, and no one's opinion is better than another's. This view, whether myth or reality, does serve at least one purpose: it tends to permeate the attitudes of small town residents and alter their perceptions and behavior on political issues, leading to an atmosphere of unanimity and democracy that may not exist.

When there is a dominant economic interest, as there may be in some of the rural communities being impacted by coal development, representatives of that interest tend to dominate the political environment of the area. The transition from small town to boom town to urban area will involve all sorts of changes in the local power structure. The differentiation and specialization of interests, associations, and interdependencies that accompany urbanization and industrialization have their effects on the local political system, as well as in other dimensions of life described earlier. Urbanization will attract newcomers from different backgrounds, with different interests, with more and different demands to be placed on the political system.

Local governments and political agents will begin to operate through secondary relationships. The attention that one inhabitant might receive from governmental officials in the small town will weaken with increases in the societal scale. Part of the reason for this change is that some newcomers will come from situations where politics operated at urban levels, rather than small town levels. A new, more urban style of politics will emerge, where people begin to participate in greater numbers and with greater intensity.

However, the new situation may not truly democratize the political process, for if one elite (farmers, ranchers, or local merchants) is replaced by another elite (the mining and power plant industry), the style of politics can remain much the same. In the end, however, new organizations of all kinds will compete with each other for respect and dominance, so that membership in any one organization might not insure success in the policital arena. Traditional authorities--whether the family, the school, the church, the tribal council, or the village government--will be supplanted by new social and political organizations.

Even the representatives of the mining industry are likely to have diverse backgrounds and interests. They will undoubtedly try to accommodate themselves to the local system to some extent in order to make themselves more acceptable to the community. Carnes predicts that if the new industries do take an active role in community political affairs, they will do so gently and over matters largely trivial and unimportant.

The above discussion leads to the conclusion that the recruitment and selection of political leaders and leaders of social, civic, and fraternal groups will change immensely. The new leaders will probably be younger, more educated, and more heterogeneous.

As discussed above, changes in power structure and access to power will likely occur whether or not coal development takes place. As is pointed out, the important ingredients are time and the extent of development: if massive development occurs in a short span of time--less than 10 years--changes will come about so fast that local governments and politicians might have to willingly (or unwillingly but out of necessity) surrender their home rule to higher level governments which have the expertise, sophistication, and control to handle the problems.

A Comparative Case Study: An Empirical Approach

In an attempt to predict and understand the effects of coal development on lifestyles and culture in the Northern Great Plains, the Institute of Social Science Research of the University of Montana conducted ethnographic research, "A Comparative Case Study of the Impact of Coal Development on the Way of Life of People in the Coal Areas of Eastern Montana and Northeastern Wyoming" (ISSR, 1974).

Ethnographic research involves interacting personally with many people who are representative members of the study area's several natural communities and of its various other social categories. The ISSR research team took notes of their conversations with and accompanying observations of about 1,000 people. They formally scheduled interviews with 300 of them, while actually living in the study areas of Colstrip, Forsyth, and Gillette. Gold suggests that, although his findings constitute an empirically sound beginning in understanding the social impact of coal development on people in Montana and Wyoming, several years of continuous research should be undertaken, using combinations of ethnographic and quantitative methods of data collection, in order to fully document this social impact in the fundamental terms of changes in human organizations, social relationships, and individual behavior.*

The ISSR study team examined the impact of coal development on the way of life of people in the coal areas of eastern Montana and northeastern Wyoming. They focused on the social effects the construction activities contracted for by Montana Power and its associates have had to date on Colstrip and Forsyth, Montana (including the Decker-Birney-Ashland area), and on the present and anticipated social impact of increased coal development in the vicinity of Gillette, Wyoming. The purpose of the research was to present the views, thoughts, feelings and reactions of the people living in these areas regarding the impact which coal development is having on their way of life.

---

* For an extensive discussion of the uses, techniques, and listing of ethnographic study, see ISSR, pp. 1-35.

USSR report is a complex document, dealing with several aspects of the social impact of coal development. It is extremely difficult to summarize and still capture a feeling for the area as seen through the eyes of its inhabitants. Because of this, a section of the report was chosen as represented of the type of issues and feelings evident in the area. For more complete treatment of these issues, the reader is referred to the support document.

This excerpt is taken verbatum from Part VI of the ISSR discussion draft dated April 22, 1974. It is a distilled, retrospective look by the ISSR study team upon some of its findings.

ISSR Study Extract

At present, land in the study area which has no strippable coal is less economically attractive than that which does have coal beds lying underneath. However, stripping does create some long-term problems. It entails a sacrifice of recreational values and of future land use possibilities, according to some informants. Many believe that the choice for coal development means there will be less food production both now and in the future, while others feel that some of the land may be more productive following mining and reclamation. Because stripping frequently does extensive damage to the land, concerned ranchers maintain that the cost of this kind of mining should be calculated in terms of the overall long-run effects created rather than solely in terms of the economic feasibility of surface as opposed to underground coal extraction techniques. When mineral rights agreements were originally signed, there was no concept of strip mining and it was assumed that underground mining might be done some day. Many ranchers consider it unfair that this assumption is being ignored. They believe the nation should pay a realistically high price for the coal and should therefore deep mine it, not strip and destroy the land and violate the original agreement between ranchers and the Federal Government.[1] Others, considerably fewer in number, view the land only as a means to earning a living; it has no intrinsic and enduring value for them. This group views the land primarily as a business item and is willing to risk its destruction and even put up with people pollution if the price is right.

Outsiders see the land as expendable, and ranchers sense that these people also look upon them as expendable and place a low value on the Western way of life. The ranch offers freedom, absence of regimentation, isolation, and quiet. Coal development threatens all these as well as the aesthetics of the area. Most ranchers feel that a demented value system is being imposed upon them and that their Western hospitality and trust are being violated. For example, newcomers do not have the same respect for the land as do the ranchers, who are more bewildered than angry about the abuses to which their property has already been subjected by the influx of sloppy and careless trespassers. Many newcomers act as if these ranches are public property.[2]

---

[1] Some feel that the land above deep-mined coal would fall in an amount equal to the thickness of the mined seam; as such, natural stratification would be maintained. The most undesirable feature of deep mining is that it would bring in even more poeple than are required for strip mining. However, some informants maintain that there should not be extensive deep mining out here when the vast deposits of low-sulphur, high BTU coal in the East could be deep mined to supply the energy needs of that part of the nation.

Aside from having to deal with a great many new people who have a foreign set of values, ranchers are beset by a number of other difficult aspects related to coal development--aspects which have put them in a very vulnerable position. First of all, neighboring ranchers are highly interdependent and together comprise a fragile social system which is in danger of collapsing if only one or two ranchers sell out. Commenting on the fragility of the situation, one informant flatly stated, "That sums it all up." Another informant explained:

> *Tearing up one's roots to allow rootless people in is not a solitary act. It has a big impact on one's neighbors, on their water, on their ability to live as they wish, and so on. How can anyone justify selling out to industrialists as anything but an anti-social act?*

Some pro-development ranchers resent being made to feel that they should give up the money they could make from coal to preserve a neighbor's feelings, sensitivities, and way of life. Secondly, some who have leased land (primarily from Federal and State agencies or the Burlington Northern railroad) are now finding that their leases are being taken away on short notice. When leases are withdrawn, competition for replacement land sets in.[3] Ranchers are highly vulnerable not only to such changes in leasing policies and practices but also to water contamination or loss of supply and to the destruction of the highly nutritious, indigenous grasses by surface mining. Thirdly, their taxes are rising due to conditions beyond their control; they fear a heavy tax burden when the coal boom is over. "We are paying for coal development," and "We are paying for our own destruction," were common observations about the situation. Fourthly, because as a group they are so highly specialized in their work and so deeply attached to the land and committed to their way of live, ranchers find it difficult to adjust to the changes threatened by coal and related energy developments. They feel that they have no say in the decisions being made which so fatefully affect them and that they are powerless to influence what is happening. They are uncertain about so many aspects of what is going on and proposed.[4]

---

[2] There are a few newcomers who want to earn enough money to be able to live here the way the ranchers do, and some people who came to the area as miners two or three years ago have adopted the local attitudes. These individuals, however, represent a very small portion of the newcomers. Other persons are also interested in preserving the area. In the words of one informant, "When Easterners buy places out here, they tend to be more resistant to industrialization than we old-timers are."

---

[3] Most ranchers depend on leased land for grazing because they do not have enough deeded land to support their livestock.

[4] Ranchers in eastern Montana are still trying to get clarification on patents concerning coal. If they had such clarification, they would not be so vulnerable to the actions of "land grabbers" (self-employed or hired people who reportedly often use questionable methods to acquire land for coal companies).

In the face of such ominous and sweeping change, ranchers stand to lose everything they have and are. They are unprepared to cope with coal development and hope that the more articulate among their members can do something to stop it. A few have emerged as natural leaders, taking it upon themselves to inform others and to represent them in matters of mutual concern. Some have become models of resistance to development. In this way they have shown how to fight it and have revealed it as less than totally inevitable, but lack of communication has kept many ranchers from realizing just how much support they have for their views. Thus, many unnecessarily feel isolated and alone. Being outnumbered by both businessmen and construction workers, ranchers have the new status of a persecuted minority and are caught in what appears to be a losing battle: the nation's alleged need for coal versus the life-style of a few. In effect, these ranchers are being made to feel guilty for trying to save their lives.

Established landowners are not the only ones paying big social and emotional costs for development. Construction workers in many cases are also paying a high price for their economic benefits. Reports are that many of the wives sit around all day and watch television, eat too much, and get fat; similarly, many husbands drink and fight too much. Family relationships often leave a great deal to be desired. Many newcomers are not strongly family oriented because they have had to leave their families behind or because frequent moving has precluded getting too involved in extended family relationships. There is much frustration, boredom, desertion, and divorce. Trailers in some cases are overcrowded or unsanitary. Many newcomers hang on because they want to avoid returning to marginal employment situations. The willingness to pay big social costs to obtain big money is what there is in common between the many business-oriented oil and construction workers and their counterparts in ranching who are also inordinately concerned with making money.[5] These workers and ranchers tend to be loyal primarily to themselves, tending therefore to act like "boomers" who justify their way of life by belittling those whose views and traditions are other than their own.

Oil laborers who have remained in Gillette for a few years or longer appear to be putting down roots and becoming true community members. They appear to have made a decision to give up the normal values of the itinerant worker and to "go native." In this respect they are like the mine workers at Colstrip, who after being on the job for a year and a half or two began to noticeably "go native"; they clearly identify and associate much more with the locals than with the new construction people. Both of these cultural convert groups anticipate long-term work opportunities and are taking them and related opportunities to become bona fide members of the local community, that is, they are seeking to establish themselves as locals and are absorbing the local values.

---

[5] Reference is made here to the typical businessman, who is strongly inclined to view his work much more as a means to making money than as an intrinsically rewarding and self-fulfilling activity. The typical professional does just the opposite, stressing life-style much more than economics. For a discussion of this kind of distinction, see Everett C. Hughes, The Sociological Eye: Selected Papers (Chicago: Aldine-Atherton, 1971).

As would be expected, lots of workers are primarily interested in getting higher wages in order to acquire material possessions. Most of these are not interested in long-range investments or savings. Some work in order to be able to take time off to hunt. In short, work is a means to various ends for most new employees in the study area, who appear to be largely detached from their jobs and willing to stay on only so long as the money is more attractive than that offered by another project. Such an attitude is totally foreign to most ranchers, especially in Montana where dedication and commitment to one's work virtually absorbs one's whole life.

The values of most ranchers in Rosebud County incline them to want to accommodate the coal industrialists. These efforts are continually rebuffed; ranchers run head on into industrial values which are based upon conflict models of behavior and to which they do not subscribe. One informant summed up the situation by commenting, "Isn't that a terrible way to live, not to be able to trust anyone?"

The values of ranchers in Campbell County are quite similar to those in Rosebud, but many of the Wyoming ranchers evidently have somehow learned to "accommodate" (i.e., to sell or lease land) to the industrialists. Whether they are truly accommodating or merely capitulating is not yet clear.

Attitudes Toward the Environment: One Wyoming County

A study conducted by Cecil L. French, entitled Attitudes of Johnson County, Wyoming Residents Towards Selected Aspects of Their Environment, provides some insight into the feelings of these people towards their natural environment and its possible utilization. For the study, a random sample of 100 adults was interviewed, focusing on (1) leisure time pursuits of the residents, and especially their use of the outdoor recreational facilities so easily available; (2) the values they held regarding the aesthetic worth of their immediate environment and their feelings regarding its preservation or use at some future time; and (3) their satisfactions with their present life situation, including their feelings of social significance, hopes for the future (an area they feel they have neglected), and intentions concerning future residence. Although all of the above factors have some relevance to the impending development postulated for the State of Wyoming, this analysis is confined primarily to the second one--values regarding the environment and its preservation and use.

Attitudes Towards the Local Area

A direct question revealed that Johnson County residents considered their area was one of great beauty (83 percent thought it had "exceptional beauty"). When they were asked whether the area should be preserved, conserved, or developed, the overwhelming response (72 percent) was: "Steps should be taken to preserve it as it is." However, it is interesting to note that 25 percent thought "The resources of forest and mineral should be utilized, even if it meant some loss in beauty."

Attitudes towards Specific Industries

Attitudes towards specific industries were examined with the expectations that, since industries varied by the amount of blight they inflict on an environment, a person's attitude toward a specific industry would depend on whether he leaned toward preservation of the environment or toward economic development. Residents were questioned about the possibility of the growth of three specific industries in the area--tourism, logging, and strip mining. A vast majority of the respondents had seen examples of each and had a clear idea of what was at issue for the area under each type of development.

Tourism: The people interviewed believed that tourism was the most acceptable of the three industries. Although tourists often appear "odd" and at times annoy local residents, they provide, in addition to the tenderfoot lore, money for the area. Furthermore, they eventually go home and their pollution can then be cleaned up.

Strip Mining: The next most acceptable industry for the area was strip mining; however, it must be added that when the interviews were carried out in 1972, most residents believed that strip mining would be "over ten years" before any development began. As is shown by the responses below, there was strong opposition to strip mining even in 1972:

"What are your reactions to this form of mining?"

Extremely positive	1
Generally positive	25
Not concerned	15
Generally negative	27
Extremely negative	31
Total	99

Ranchers were the most receptive to strip mining, apparently because Reynolds Aluminum, the resource owner, had at the time assured these ranchers an increased supply of water for irrigation. Furthermore, the search for resources had caused a land boom which held promise of considerable profit for some of these people. Now that Reynolds has sold its holdings in Johnson County to Texaco, it appears that ranchers are not so certain their water interests will be given high priority. Some now see their way of life strongly threatened by mining development. What will happen remains to be seen, but an atmosphere of mistrust seems to be developing. Some ranchers voice doubt that others will do much to form a united front. Strip mining is not a popular prospect with any occupational category, and even the ranchers were divided in their opinions (10 responses were positive, 3 neutral, and 8 negative).

Logging: Logging, especially clearcut logging, was the most unpopular of the three industrial activities proposed for Johnson County. The mountains in the area have recently been subjected to quite extensive clearcutting, and feelings against it are high. This attitude could be due in part to the fact that this method of timber harvesting was a political issue in 1971, as Senator McGee of Wyoming was attempting to gain a moratorium on such practices.

Conclusions

Existing theory indicates that the urban, upper middle class is most "environmentalist" oriented. However, the findings of this study do not support these assumptions. In Johnson County, no significant differences among the occupational categories were found. Most residents, regardless of occupation, were interested in preserving the natural environment. Younger persons tended to hold these beliefs more strongly than older ones. White collar workers (as expected) were more organization minded, in that they were joiners. The implications are that others may not be represented in decisionmaking because many persons seeking an expression of community opinion contact higher status persons and assume they "speak" for the community. Ranchers in this sample were less preservation minded than other occupational categories. Because they attract a great deal of attention in the press, their views may prevail over those of less expressive groups.

Attitudes of Youth Toward Cost Development

Thusfar, in assessing the potential impact of coal development on the Northern Great Plains, little attention has been given to one important group--the young adults about to make personal decisions concerning their future in the labor market and their relationship to the region. Two studies have examined this group: "Western North Dakota High School Senior Profiles," by David Bickel and

Clark Markell, and "Anticipated Energy Resources Development Impact on High School Youth in Converse County, Wyoming," by John P. Farber and Charles G. Newton.

Many of the high school students surveyed have little first-hand knowledge of coal development. However, the North Dakota survey indicates that a large percent of them favor coal development and feel that new people are good for the State. More negative attitudes toward coal development were apparent in the Little Missouri Valley area of southwestern North Dakota than in areas to the north and east. Students from southwestern North Dakota were also more inclined to question the value of immigration related to energy development and the development of resources for use outside the State.

Students in Wyoming were not specifically surveyed as to whether they favored coal development. However, when asked about potential impact, they predicted changes in life style consistent with known transitions in "boom-town" situations. Some were especially concerned that impact might bring about impersonalization, fragment or somehow negatively change their current social and interpersonal relationships, and force restricted freedom of movement.

North Dakota students have a strong preference for living on farms, or in towns the size of Bismarck or Minot. This suggests that many North Dakota young adults are satisfied with the choice of lifestyles available in the State, and most of them would be willing recruits into the State agricultural industry or a business or industry in or near larger communities in North Dakota.

The young people in Wyoming appeared to have little knowledge or awareness of potential job opportunities in energy industries; however, a significant number of students thought the vocational-technical aspects of their educational programs were inadequate. The majority felt that changes should be made to adapt the curriculum to new energy career opportunities. Survey results in North Dakota would seem to corroborate this finding. If institutions of higher learning would develop vocational and technical programs that realistically meet regional manpower needs, such programs would be well received as an important alternative by young adults seeking postsecondary education.

The attitudes of youth as a group would seem to have particular importance at this time to local, State, and regional governmental officials, and to industrial and educational leaders about to make decisions concerning coal development. A long-term regional problem has been the exodus of youth from the area. The assumption is often made that industrial development will provide career opportunities that will lead to the retention of young adults. Information on post-high school aspirations of students can clarify the potential relationship between economic development and the tendency of young adults to remain in the area. Attitudes of young people toward careers and training programs and on student receptivity to different types and lengths of career training can guide the decisions of educators and major employers.

Discussion Draft
NGPRP - 6/74

Communities in Decline: A Case Study

To the people of the Northern Great Plains area, the issue of declining communities is a very real one and one they have had to face for several decades. Coal development appears to offer an alternative. Statistics and projections concerning community impact of development are being bantered about. Two small North Dakota towns have been tied to coal mining for a long time. Tracing their experience may provide insights, not so much into what might happen if the coal boom were to burst, but the trend the potential coal boom may reverse.

Columbus and Noonan are two small towns in Burke and Divide Counties in Northwestern North Dakota where coal and power plant development have had a significant impact. The region is typical of the western section of North Dakota. Many of the small towns that may experience coal development in the coming decades resemble Columbus and Noonan in structure, population, background, and way of life. The resources, human and physical, that have been affected by coal development and decline are the same resources likely to be impacted by development in other parts of the State.

Lignite coal was instrumental in the development of the Columbus/Noonan area from the beginning of its settlement during the early 1900's. Both the region and State enjoyed an agricultural boom, reaching peak populations in 1930. With the Depression of the thirties came droughts, and many farmers lost or left their farms. Since then, a movement toward larger farms has set in, and large farms mean small populations.

Columbus and Noonan did not follow the demographic pattern of the rest of the State. This area reached peak population in 1960, with extensive decline from 1960 to 1970. Most of the factors that caused population decline in the rest of the State were also apparent in Columbus and Noonan with one major exception--coal mining. Coal mining was the only nonagricultural basic industry and it helped offset the population decline as people left the farms. Later, the coal industry and power plant closings, in all probability, caused the extensive population declines. Noonan lost 35.5 percent of its population from 1960 to 1970; Columbus lost 30.8 percent.

The population loss was concentrated in certain age groups. With the decline in mining operations, most miners and power plant workers transferred to other locations. Many of the young people also left the communities. As a result, both towns have been left with middle to old aged populations. The average head-of-household in Columbus and Noonan is 55 years old. He is male and has 12 years of schooling or less; he is married or widowed; and has lived in the Columbus/Noonan area at least 16 years.

According to the community questionnaire, the major employment sectors in Columbus and Noonan are farming (44 percent), mining (6 percent), a combination of farming and mining (8 percent), business (8 percent), and the professions (6 percent). Over half of the women are housewives. The median family incomes in Burke and Divide Counties were some $1,100 below the State norm of $7,836 in 1969.

Unlike many other small towns in North Dakota, the business communities of Columbus and Noonan continued to boom after the Depression. Each served an extensive agricultural area and offered a wide array of goods and services. With the decline in the coal mining industry came a decline in the business community. However, it was not a cause and effect relationship; there were other significant factors. Improvements in the highway network certainly contributed to this decline; good roads and cars allowed farmers and small town residents to go to the larger communities to shop. School bussing had the same effect. When the school system began its bussing program, parents ceased coming into town to pick up the children and do the family shopping.

Seven businesses opened or changed ownership in Columbus in 1972. Now, in 1974, the business sectors of both towns show signs of decline. Noonan is in especially poor condition. Nearly half of the buildings on Main Street are vacant and decaying. The once-proud "white city" is old and run down; the stores are old fashioned, with little modernization. There are a bowling lane, cafe, grocery, elevator, receiving station of the Crosby Bank, retirement home, telephone company, grain company, hardware store, railroad depot, two bars, and two service stations in Noonan. Columbus's business community is in somewhat better shape. It has a theater, beauty shop, variety store, supermarket, motel, full-service bank, automobile dealer, Legion hall, bar, Rural Electric Co-op, laundromat, insurance agency, real estate, law office, hardware stores and an implement dealer.

In Noonan the businesses tend to close. The differences between the market and trade sectors of the two communities are probably explained by (1) Noonan's proximity to a larger trade center (Crosby), (2) Columbus's location in Burke County, where shipping rates are lower, and (3) the fact that the business community in Columbus has made a major effort to maintain its services.

In earlier times, Columbus and Noonan enjoyed a variety of non-governmental services. Now these services are quite limited: There are several volunteer organizations in the two towns; however, most of them have declining memberships. In 1973, an article appeared in the local newspaper concerning an organizational meeting for a Noonan Jaycees group. Nothing came of the meeting, and most of the residents stated that one circle group (Lions) was enough.

Health care delivery is minimal to non-existent, even though both communities had doctors at one time, and Noonan maintained a hospital. Actually, the only available medical service is from the volunteer fire department. Residents must travel to larger towns such as Crosby, Bowbells, Estevan, or Minot for medical care. The old Noonan hospital has been converted into a retirement home, which is now under attack because of new regulations. Under recently instituted rules, no nursing care can be offered in this home. The controversy has high community interest, but it is unlikely that anything concrete will be done to retain it.

As for non-governmental services, small towns generally suffer from a lack of skills, organizations, and institional infrastructures.

Many of the organizations and activities depend on one person for their support and motivation. When that person moves or dies, the activity usually dies with him.

Coal development and decline have had significant impact on the municipal governments of Columbus and Noonan. Both communities expanded facilities and services during the development period. Now both communities must find ways to maintain these services. The problem becomes even more acute when the areas are faced with new State and Federal regulations. The two communities have responded in different ways to their economic decline. Columbus has always been considered a forward-looking community. It was one of the first towns in the area to get municipal sewage and garbage collection, and is the only one to have all the city streets paved, with curb and gutters. The list goes on. However, even Columbus is having trouble meeting new government regulations. The local ambulance service was recently suspended because it did not meet State standards. State assistance was offered to aid in upgrading the service; however, the town did not respond to any of the inquiries. The town is in the process of complying with the new regulations, but in the meantime, there is no ambulance service.

Noonan seems to have resigned itself to its fate. For instance, at present it is not in compliance with State regulations concerning sewage facilities. The residents are aware of the problem and have some vague plans for correcting it, but do not seem to think they should have to make the necessary investment.

Generally, Columbus has fared better than Noonan, due, at least in part, to its community spirit. However, a number of various other non-coal related factors affect a community's ability to adjust to decline in mining operations, such as site, situation, and transportation. Columbus's location gives it a larger trade area and lower freight rates than Noonan.

The future of the two communities is uncertain. Columbus appears to be making some progress in handling its problems. There seems to be strong community spirit and some younger people are entering business in the area. Noonan is another story. In the next 30 years, Noonan could easily become a coal ghost town.

Can generalizations be made from the experiences of Columbus and Noonan, or is the area unique? Coal mining has been part of the Columbus/Noonan area since its early settlement. It started in an almost natural way as part of the homesteading era; there was little conflict between agriculture and mining because many individuals engaged in both.

All the mining companies were North Dakota firms; even the large corporations began as family or individual operations. Therefore, throughout most of its history, the mining industry was not viewed as an interloper or intruder, but as an integral part of the region. Coal companies entering the area in the coming decades may not enjoy the same propitious attitude.

In spite of the difference in situation, and it is a substantial one, the picture of Columbus and Noonan is one from which we can learn much. The "dying" rural community, with its attendant social problems, is not a new phenomenon; there are many examples in the Great Plains, which have developed as people have left the farms for the cities. This out-migration has been largely concentrated in the younger age groups, leaving towns with middle to old-age populations.

Coal development can offer an alternative to these small towns. However, we cannot be sure that the new settlement patterns will revitalize all of the declining communities. Furthermore, many questions will remain unanswered with regard to development and subsequent decline.

Further Research Needs

The predictions made by the urbanization typology, and the unanswered questions raised by the case studies of three impact communities and the study communities in decline, necessitate listing several areas requiring further research. In general, there is a need to directly test and refine the typology by empirical studies for predictive use in the Northern Great Plains. There are also several specific questions:

1. Although the ethnographic research methodology used by Gold was very useful for studying natural communities, it was less useful when studying areas like the trailer parks in Colstrip, Montana, which appear to be merely common areas of residence and not neighborhoods or developing social systems. Residents of these "noncommunities" need to be

sampled and their feelings elicited about the social effects of coal development on the Northern Great Plains.

2. Research by Gold has only scratched the surface of one of the first social organizations to be affected by industrial development--the schools. The needs for additional school facilities have been predicted elsewhere in this report, but the effects that result from construction workers' children being put in and out of schools at all times during the year needs to be assessed.

3. There is a need to look closely at what happens to such "innocent victims" of development as the elderly and others whose incomes will not significantly increase with coal development, but who will nonetheless feel the effect of boom town prices. Research done by Nellis in Hanna, Wyoming, has shown that property taxes rose drastically when that community became a boom town. Other coal impact communities in Wyoming, Montana, and North Dakota should be studied to determine how energy development affects the buying power of those on Social Security or aid for dependent children programs.

4. Research by Bowes (1974) in the Knife River Basin of western North Dakota indicated fear of the unknown among local people about how coal development will affect them. They ask what kinds of new businesses and entertainment establishments will come with the coal construction boom. They also want to know whether coal development will cause a "boom and bust" situation, resulting in rapid out-migration after the coal seams play out. Mercer and Oliver Counties, North Dakota, already have several coal "ghost towns" which began, prospered, and disappeared in a 30-year period from 1900-1930. The Lemmerman case study (1974) has documented what happened to two other North Dakota communities when coal mining activity declined. Longitudinal studies need to be conducted in communities like Center, North Dakota, or Ashland, Montana, to determine the long-term effects of rapid industrial development on communities that depend on an agricultural economy.

5. There is a need to determine more precisely whether there are differing attitudes toward coal development among ranchers in Montana, Wyoming, and

North Dakota. Gold's conclusion is that there are differences; conventional attitude scaling techniques would help quantify these findings.

6. More research is needed to determine the attitudes of Northern Great Plains residents toward the effect coal development will have on the natural environment. Almost all Johnson County, Wyoming, residents sampled in a study by French (1974), for example, tended to favor preservation of the natural environment, regardless of their occupations. They seem to prefer extractive industrial development such as coal mining or logging only as a balance between earning enough income to stay in Johnson County and being forced to move because of declining employment opportunities. The French study should be replicated in other counties in the Northern Great Plains.

7. Very little is known about the effect that energy development will have on income distribution. It can be recognized that, with rapid, localized growth and its attendant inflation, those in fixed incomes and those who cannot move from the low-paying to the high-paying sectors for whatever reasons, will be adversely affected in terms of their real income. It should be stressed that

without adequate data on income distribution and accurate localized price deflators, it is virtually impossible to say anything definitive about income aspects of general welfare.

8. The effects of alternative patterns of settlement upon social and political structure and systems needs analysis. This includes the effects and implications of such alternatives upon existing systems.

IV. EFFECTS ON INDIANS

This section of the summary report discusses the social and economic effects that coal development will have on Indian (also known as Native American) land and people in the Northern Great Plains. It is based on the work group supporting document, "Indians in the Northern Great Plains," prepared by the Bureau of Indian Affairs' Planning Support Group at Billings, Montana. It is supplemented by correspondence and testimony contributed by the Northern Cheyenne Research Project, and the Northern Cheyenne Landowners Association, both from Lame Deer, Montana.

The Environmental Impact Statement was also consulted, particularly the sections summarizing Public Hearings and Written Comments. This statement was prepared by the Bureau of Indian Affairs as part of the proposal by Westmoreland Resources to mine coal on the ceded area near the Crow Indian Reservation in Montana. Other groups, including University professionals and tribal planners, are also conducting studies on the effects of coal development on Indian people and lands in the Northern Great Plains; however, the results of these studies are not discussed in this report.

The Bureau of Indian Affairs (BIA) report gives a demographic profile of all Indian reservations in the Northern Great Plains, but it does not comprise a total study of the impacts of coal development on each reservation. Time limitations did not permit an in-depth study of each tribe that has land underlain by coal deposits.

Preceding page blank

Overview

The Northern Great Plains study area encompasses all or parts of 5 States and 23 Indian reservations. These reservations contain Indian-owned land ranging from one or two townships to millions of acres, and have Indian populations ranging from a few hundred to over 11,000. They contain over 13 million acres of land, covering more than 20,000 square miles, an area considerably larger than many States. They provide a resource base for over 80,000 tribal members.

There is a great deal of institutional complexity regarding the Native Americans in relation to the rest of society in the Northern Great Plains. Indian reservations are independent political entities, each having its own political structures and legal codes. The States in which they are located have little if any jurisdiction within the reservation boundaries. The reservations represent a great diversity of sub-ethnic groups, and differ significantly in their approach to socio-economic situations. They have historically been socio-economic as well as geographic islands in a region already isolated by great distances.

Services, normally the responsibility of local or State government in a non-Indian community, are performed in a cooperative effort between the various tribes, the BIA, and other Federal and State agencies. This includes a trust responsibility in the performance or assistance in the development, use, control, and protection of Indian lands and land-related resources as well as the construction, maintenance, and operation of irrigation systems and the development of recreational services and areas. The provision of socio-economic services such as educational, health, and credit facilities are derived from BIA and the Public Health Service, as well as from standard government and private sources.

The Indian population in this five-State area has been increasing at a significantly faster rate during the past decade than the total population. Between 1960 and 1970, there was a measurable increase in Indian population on all the reservations, while the total population of South and North Dakota declined slightly. Montana and Wyoming experienced only a modest increase.

On some reservations, over half of the Indian land is owned by the tribal entity. On others, the very large majority is in individual Indian allotments. The amount of Indian-owned lands decreased steadily during the first 65 years of this century. This occurred through cession to the Federal Government or by sale to non-Indian owners. During the past 3 decades, several tribes on the Missouri River have lost considerable amounts of land through eminent domain to large main-stem reservoirs. This erosion of land-ownership has been minimized in recent years, and most of the tribes are now taking specific steps to consolidate ownership, to acquire key tracts of land, and to minimize further land attrition by purchasing individual allotments that otherwise would be sold to non-Indians.

The land on the Indian reservations ranges from high forested mountain areas on the Crow to semiarid grassland typified by several South Dakota reservations, as well as fertile irrigated river bottom valleys. Like non-Indian lands, some areas are underlain by the Fort Union Formation, which contains huge coal reserves. Special attention is being given to the development potential and jurisdictional aspects of the Indian water and other mineral resources in the Northern Great Plains Region. The specific identification and quantification of these resources and rights is a major effort of the Native American Natural Resources Federation of the Northern Great Plains, and the result of their effort will be included as an input into the Northern Great Plains Resources Program report.

The Six Most Affected Reservations

Table 10 shows the land area and population of the six reservations in Montana and the Dakotas that will feel the major social and economic impact from coal development. These six reservations serve as home for about 25,000 Indians and encompass over 5.6 million acres of trust land, an area larger than New Jersey. About the same acreage of coal rights lie partly within and partly outside the reservations. These reserves probably amount to tens of billions of tons.

Population

All six reservations have experienced a significant population increase in the last 10 years (Table 11). The Indian population increase contrasts sharply with the overall population changes that occurred in the States where the six reservations are located (see Table 1).

Table 10 - Indian

Missing

Table 11--Indian population change, 1963-73

	Population		
	1963	1973	Percent increase
Crow	3,678	4,334	17.8
Fort Peck	3,390	6,202	82.9
Northern Cheyenne	2,166	2,926	35.1
Cheyenne River	3,421	4,335	26.7
Fort Berthold	2,408	2,775	15.2
Standing Rock	4,300	4,868	13.2
Total	19,363	25,440	31.4

Source: Bureau of Indian Affairs (1974).

Labor Force and Employment

All six reservations have higher unemployment rates than the States where they are located. The 1970 unemployment rates reported by the Bureau of Labor Statistics ranged from 11.6 percent for the Crow to 29.1 percent for Standing Rock. Comparable rates for Montana were 6.3 percent; for North Dakota, 4.6 percent; and for South Dakota, 3.3 percent (Table 12).

Current Indian employment is in agriculture, government, and tourism. The Northern Cheyenne also have a significant number of people employed in logging and milling. These skills provide the only nucleus for developing the Indian manpower for employment in the coal-related industries. If the Indian labor force wants to be employed in coal industries, many of them will need to learn new skills. This assumes that members of the Indian labor force will actually seek employment in coal industries. The high unemployment rates on the reservations indicate that they would.

Table 12--Unemployment rates: North Dakota, South Dakota, and Montana, compared to Indian reservations within their boundaries, 1970

Area	Percent unemployment
Reservations	
Crow (Montana)	11.6
Fort Peck (Montana)	25.7
Northern Cheyenne (Montana)	11.1
Cheyenne River (South Dakota)	18.4
Standing Rock (North Dakota-South Dakota)	29.1
Fort Berthold (North Dakota) [1]	--
States	
Montana	5.5
North Dakota	4.6
South Dakota	3.3

[1] Data not available.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

However, many Indians are concerned about the adverse social and economic changes that coal development will bring. It is possible that some Indians may choose not to work in the strip mines and power and gasification plants.

The Indian Family and Income

On the six reservations, Indian family size is larger, family income is lower, and a greater percentage of Indian families are in poverty than are found in the population standard of the six States where they are located, or in the U.S. population (Table 13).

These large families and low incomes are reflected in the percentage of the families having an income below the poverty level.

More than 57 percent of the Standing Rock families and over 39 percent of the Crow families are below the poverty level, compared with 10 percent for the country as a whole.

Table 13--Family size and income: Indians compared to total population

Area	Average family size	Median family income	Families with incomes below poverty level 1/
	Persons	Dollars	Percent
Reservations:			
Crow	6.60	5,260	40.0
Fort Peck	6.54	5,136	46.7
Northern Cheyenne	5.37	5,270	39.8
Cheyenne River	5.99	3,857	54.8
Fort Berthold	6.10	4,800	45.3
Standing Rock	5.38	3,667	58.3
States:			
Montana	3.55	7,494	10.4
North Dakota	3.72	7,838	12.4
South Dakota	3.66	8,512	14.8
U.S. (all families)	3.62	9,433	10.7

1/ 1969 average poverty threshold for a nonfarm family of four headed by a male = $3,745.

Source: 1970 Census.

Educational Levels

Educational levels on the six reservations are significantly lower than those for the total populations of the States in which these reservations lie. A brief comparison from U.S. Census data between the Crow and Standing Rock reservations illustrates this point.

The median educational level of Crow people over 25 years of age is 9.4 years, almost 3 years less than the 12.3 years for all Montanans over 25. For the Standing Rock people of the same age group, the level is 9.7 years; for South Dakota, 12.1 years.

Anticipated Reservation Coal Development

The Standing Rock and the Cheyenne River reservations have combined coal reserves estimated at some 100 million tons. However, commercial exploitation is considered marginal, and mining companies have thus far shown little serious interest in development.

Fort Berthold Reservation is reported to have between 4 and 20 billion tons of measured and indicated lignite reserves, much of which is commercially recoverable under present technology. However, members of the three affiliated tribes have expressed great concern about the cultural and environmental issues accompanying coal development and have imposed an indefinite moratorium on leasing and other mineral activity.

The Fort Peck Reservation in eastern Montana has strippable lignite reserves estimated at several billion tons. However, coal developers have shown little interest in them, and no leasing or prospecting activities are currently underway.

The Northern Cheyenne Reservation also has huge coal reserves, estimated at excess of 5 billion tons in strippable deposits. However, tribal leaders and members are presently discouraging any development activity until the social and environmental effects of coal development are more fully understood. Testimony presented by the Northern

Cheyenne Landowners Association at hearings regarding coal development conducted by U.S. Senator Lee Metcalf from Montana in April 1974 illustrates their concern:

> The imminence of strip mining on the Northern Cheyenne Indian Reservation is bringing about a questionable future for the resources and Indian lands as well as the lives of the people exposed to it. The magnitude, nature, and rapidity with which this development will be brought upon the Cheyenne can only be felt as modern day genocide.

The Crow Reservation is the only one of the six where coal development is in progress. Therefore, impact analysis for this study concentrated principally on the effects of coal development on the Crow peoples. It should be pointed out that although the Crow have initiated contractual agreements with mining interests to extract coal from ceded lands adjacent to their reservation, there is diversity of opinion among members of the tribe as to the desirability of coal development on the reservation. Public hearings held at the Crow Agency, Montana, in November 1973, produced testimony by tribal members both for and against coal development.

Implications of Crow Development

Arrangements have already been made with Westmoreland Resources to mine at least 77 million tons of Crow-owned coal on Sarpy Creek in the Ceded Area which lies immediately north of the present boundaries of the Crow Reservation. A final environmental impact statement relating to that mining operation has been prepared and filed.

In addition, the Crows have either prospecting permits or leases with American Metals Climax Company, Gulf Minerals Resources Company, Peabody Coal Company, and Shell Oil Company. Explorations by these companies indicate a total of 4 to 4.5 billion tons of coal considered strippable under present economic and technical levels.

Although the Crow leadership is on record as encouraging coal development (see, for example, written testimony from David Stewart, Crow Tribal Chairman, contained in the Westmoreland Environmental Impact Statement), the industrializing of the Crow economy raises numerous social and economic questions. The BIA-authored Supporting Document, on which this summary is based, has projected significant employment opportunities in coal-related industries on or adjacent to the Crow Reservation. If only two or three strip mines are operated (a projected "low level" of development) the work force would conceivably be mostly Indians, since they are assured preferential hiring and assuming they seek work in the mines. However, a "high level" of development (projected by the BIA to mean five or six strip mines producing 90 million tons of coal annually, plus two gasification plants, one liquification plant, and supporting power plants) will require very high non-Indian employment. This implies the possibility that the Indians might become a minority on their own reservation unless specific residential controls are exercised. The Crows have been assured preferential hiring treatment in the coal industry, but history has shown that even written assurances are not necessarily enough to prevent discrimination against a minority group.

Earlier, the point was made that Indian reservations are jurisdictional entities. Yet there are numerous gray areas affecting such vital processes as education, law enforcement, and public assistance. Coal development on or adjacent to the Crow Reservation may tend to make these gray areas grayer.

Further Research

A host of questions have not been answered in this report, but must be addressed before the full impact of coal development on the Crow Reservation can be estimated:

1. How will the schools and the teachers be provided for the expanding population?
2. What controls will the Crow exercise in the development of residential and commercial facilities, particularly by non-Indians?
3. Can medical, social, and other services for this massive population increase be provided?
4. What effect will the high paying coal industry jobs have on the resident and nonresident Crow, especially those on fixed incomes?
5. Will the present institutional structure be adequate to cope with the faster pace of governing a more highly populated area? What modifications may be required?
6. Of what significance is the possible destruction or degradation of historical archeological sites and places of aesthetic value that strip mining will inevitably bring? How can this degradation be minimized?

7. What will be the long-term effects of increased intercultural mixing on the urbanizing process on future Indian and non-Indian cultures?

In more general terms, a detailed analysis of each Indian reservation is needed, in even greater scope than this study provides, if planners' efforts to meaningfully involve the Indian people in coal related work is to be successful. Analysis of the six Indian reservations with respect to their attitudes, job training, motivational levels, feelings on commuting, among other factors, would be beneficial in dealing with the problems associated with the Indian nations.

Inferences

The development of substantial coal mining and associated industries on the reservations will have a profound effect on all residents.

Where massive development is expected, as is projected on the Crow Reservation, significant socio-economic changes are anticipated, including:

(1) Increased employment opportunities for both Indians and non-Indians

(2) Significantly increased incomes to Indian people

(3) A substantial increase in non-Indian population levels

(4) Increased need for social services

(5) Substantial changes in community institutions and values

The degree of impact of any development on a given reservation and/or region depends on several considerations:

(1) The complexity, scale, and size of the development

(2) The time span involved in the development

(3) The manpower requirements

(4) The efficacy of controls placed on mining and community development

(5) The adaptability of the reservation's institutions to the changing society

In attempting to isolate the impact on Indian reservations, it is important to remember that they cannot be considered as developmental islands, as they have been historically. Very intensive and extensive coal development will be taking place in areas on or immediately adjacent to reservations. These adjacent developments will compete with the reservation for manpower, housing, public services, and other facilities. For instance, the massive coal development planned and underway in the areas immediately adjacent to the Crow Reservation, such as the Decker-Birney and Colstrip areas, will tend to magnify the impact on the Crow Reservation because of their close proximity and intense competition for services.

The rate or velocity of development will affect the capacity of the reservation's institutions to adapt to its changing needs and aspirations. The reservation's capacity to effectively react to development demands will be determined, to a large degree, by the time and pressures involved. High velocity development will severely test the tribal council's ability to govern and direct development of their resource base.

The adaptability of the reservation's institutions to changes brought about by development is probably the most critical factor to orderly and beneficial development. The ability of these institutions to conceive, plan, and implement programs will be the major mitigating force against environmental and social disbenefits.

A development plan for the reservation that both supplements and complements the larger regional plan, while adequately representing local interest, is central to initiating effective controls. Finally, effective implementation of such a plan is a test of a plan's adequacy. It is toward this planning process that reservations must look to make orderly coal development a working reality.

Note Northern Cheyenne minority report in Appendix.

V. EFFECTS ON GOVERNMENTS*

Population growth resulting from coal development in the Northern Great Plains Region will unquestionably create increased demands for governmental as well as non-governmental services. The demand for increased services and the ability of the social system to provide them is an important consideration when discussing rapid population growth. Certain communities and counties as well as States are better equipped than others to handle these demands. In the Northern Great Plains Region, three States will be most heavily impacted by coal development. Montana, North Dakota, and Wyoming will feel the brunt of rapid development. Nebraska and South Dakota will feel the effects to a much lesser degree. Principal and profound impact will occur in the counties of Montana, North Dakota, and Wyoming that are underlain by the coal deposits of the Fort Union and Powder River Formations. Six counties were surveyed and analyzed in hopes of determining their capability to handle rapid development. They are Big Horn and Rosebud in Montana; Mercer and Oliver in North Dakota; and Campbell and Sheridan in Wyoming.**

---

* This chapter is based on two principal studies: "The Anticipated Effects of Major Coal Development on Public Services, Costs, and Revenues in Six Selected Counties" prepared by the Bureau of Reclamation, Billings, Montana, and the Center for Interdisciplinary Studies, Montana State University, Bozeman, Montana; and a report entitled "Governmental Programs, Resources and Regulatory Powers Available to Assist Localities During Coal Development" prepared by James P. Twomey, with assistance from Peter G. Kuh. Additional information was gleaned from "State Land Use Planning Reconsidered," developed by George Nez and Douglas L. Mutter of the Regional Planning Council of the Federation of Rocky Mountain States. Other sources were consulted for technical data.

** Oliver County will be relatively unaffected compared to the other counties.

Preceding page blank

These counties differ in their preparedness to handle the projected population growth, but they all have problems. In order to evaluate the region's capability to handle these problems, a brief look at the sources of revenue and the services which must be provided is necessary.

Sources of State Revenues

The ability of an area to provide the required or desired services depends on the ability of the various levels of government to secure the necessary revenues to finance the programs. In this respect, it is essential that the funds be available when needed in order to prevent development lags. Montana, North Dakota, and Wyoming derive their revenues from a wide variety of sources (Table 14). Generally, the funds raised through these taxes go to the State and then are reapportioned back to the counties and other governmental subdivisions. The reapportionment rate varies with the tax and with the individual State.

Table 14--Tax levies affected by coal development, by State

Montana	North Dakota	Wyoming
Strip coal mine license	State corporate income	Severance
State personal income	State personal income	Sales
Electric energy	Business and corporation privilege	Conservation
Corporation license	Sales	Property
Property	Property	
Resource indemnity		

Source: Bureau of Reclamation (1974).

Revenues from Federal assistance programs contribute a sizable portion to the overall State budgets. This income is received in many forms: revenue sharing, specific project grants, and leasing and royalty revenues from federally owned lands, including coal lands. Some of the revenues go directly to the State for distribution; others go to other governmental subdivisions and to individuals.

Revenues from coal royalities were estimated for each of the scenarios and time frames, based on the projected mining requirements. As Table 15 shows, the amount of revenue that may be expected from this source is substantial. These revenues were estimated on the basis of a State and Federal royalty rate of $0.25 per ton; it was assumed that all royalty rates will increase. The amount of Federal royalty shown is net of the 37.5 percent returned to the State's school fund. The State's share (37.5 percent) has been included in the State values.

As development of coal takes place, revenues received by the State will increase. However, the tax base increase will lag behind the service needs.

Sources of Local Revenues

Rapid development and population growth will create regional problems because many localities across a wide area may be similarly affected. But these are really local problems; as the major burden and impact will fall on the local level. Local governments have a smaller variety of revenue sources from which to draw than do the States. In many instances, local governments are junior

Table 15--Coal, royalty estimates, State and Federal, for selected counties by scenario

($1,000)

County, State	1980		1985		2000	
	State	Federal	State	Federal	State	Federal
			Scenario I			
Mercer, N.D.	385	275	568	412	770	550
Oliver, N.D.	168	112	210	150	210	150
NORTH DAKOTA	701	499	926	674	1,205	875
Big Horn, Mt.	1,666	1,359	1,666	1,359	3,181	2,094
Rosebud, Mt.	1,700	1,375	2,087	1,688	2,456	1,969
MONTANA	3,366	2,734	3,753	3,047	6,456	4,344
Campbell, Wyo.	2,472	3,703	2,769	4,156	3,459	5,141
Sheridan, Wyo.	194	31	388	62	388	62
WYOMING	3,172	3,828	3,663	4,312	4,353	5,297
			Scenario II			
Mercer, N.D.	385	275	568	412	790	550
Oliver, N.D.	168	112	210	150	420	300
NORTH DAKOTA	701	499	1,046	774	2,672	2,088
Big Horn, Mt.	2,531	2,469	4,500	4,375	6,328	6,172
Rosebud, Mt.	1,894	1,531	3,531	2,844	5,575	4,500
MONTANA	4,425	4,000	8,031	7,219	14,503	11,547
Campbell, Wyo.	3,056	4,594	4,778	7,172	6,147	9,203
Sheridan, Wyo.	194	31	388	62	2,131	344
WYOMING	3,756	4,719	6,904	7,546	14,665	15,485
			Scenario III			
Mercer, N.D.	1,085	775	1,618	1,162	2,520	1,800
Oliver, N.D.	168	112	210	150	630	450
NORTH DAKOTA	1,401	999	2,668	2,012	4,612	3,488
Big Horn, Mt.	3,330	3,330	7,030	6,830	17,670	17,210
Rosebud, Mt.	2,666	2,144	7,170	5,780	12,000	9,675
MONTANA	6,046	5,444	15,920	13,390	49,570	33,135
Campbell, Wyo.	3,056	4,594	10,034	15,016	25,191	37,734
Sheridan, Wyo.	194	31	2,325	375	6,200	1,000
WYOMING	3,756	4,719	15,768	16,032	33,908	41,062

Source: Bureau of Reclamation (1974).

partners in the redistribution of tax receipts derived from their areas. An example of this is the Montana Strip Coal Mine License. The tax is levied at a per ton rate, based on coal with a specified BTU's (British Thermal Units). The county general fund receives 3 cents per ton from this tax; the remainder goes to the State general fund.

Generally, taxes levied on a statewide basis are distributed in a specific formula prescribed by law. For example, the property tax in North Dakota is an ad valorem tax collected by local governments. Revenues raised from the property tax are divided between the county fund, the State general fund, and the school fund (Table 16). Sales taxes are also distributed according to a prescribed formula. Wyoming levies a 3 percent sales tax on all purcheses in which sale and delivery are completed in Wyoming. Five-sixths of the tax goes to the State general fund; one-sixth is distributed to the cities, towns, and counties, on the basis of population. Local governments are also the beneficiaries of various Federal and State programs, ranging from revenue sharing to project-specific grants. As is the case with State governments, certain counties and communities are recipients (but to a lesser degree) of gifts from various foundations and citizens.

There is always a considerable lag in the distribution of revenue to local governments. For this reason, rapid population growth will present more difficult public service delivery problems for the local government than for the State. The distribution of revenue to the localities by the States and possibly the Federal Government will determine to a major degree the extent to which needed services are provided, as well as the timing of these services.

Table 16--Percentage distribution of property taxes in selected Northern Great Plains counties, 1974

County	County Fund	Local School Fund	State General Fund	State Medical Center	Other
North Dakota:					
Oliver	52	47	--	1	--
Mercer	51	48	--	1	--
Montana:					
Big Horn	28	64	8	--	--
Rosebud	36	59	5	--	--
Wyoming:					
Campbell	17	72	--	--	11
Sheridan	17	72	--	--	11

-- = Not applicable.

Source: Bureau of Reclamation.

Because of the complexity of tax structures, only a cursory look at the revenue issue has been possible. To aid localities impacted by coal development, State and Federal programs and legislation should be considered and enacted which would alleviate some of the revenue problems that will arise. This will enable local governments to finance the needed service programs before the strain on existing services becomes critical.

Service Requirements and Needs

The need for additional and expanded social services must be given careful and immediate consideration. The existing revenue-generating capabilities of the localities in the impact areas will, in some instances, fall far below the cost of the needed services. Governments will need additional and timely receipt of revenue in order to provide the social services, such as education, highways, and health care, that will be required during the rapid development periods. Generally, most of the required services are present in varying degree throughout the region. These services are funded at different levels (Table 17). Two categories, education and highways, receive the lion's share of State and local government expenditures. Service needs and the ability to fulfill them vary from area to area. Generally, in areas where the population is too small to support all needed services, they have been provided regionally.

Local Planning Needs

Many variables affect final decisions on how to deal with service needs arising from coal-related population growth. Many of these decisions can be properly considered and dealt with only at the local and county level. Regional coordination will be necessary, but because of the localized pattern of expected growth, most of the difficult work will fall on county and municipal units of government.

The capacity of planning bodies in all of the counties and localities will need to be increased substantially to enable staged

Table 17--Direct general expenditures of State and local governments per capita, by State

(1970 dollars)

State	Total	Education	Highways	Public Welfare	Health and Hospitals	All Others[1/]
Montana	675	269	169	49	28	160
North Dakota	657	286	128	46	24	173
Wyoming	876	361	224	36	67	188

[1/] Includes police protection, fire protection, natural resources, sanitation, recreational facilities, financial administration, general control, and interest on general debt, as well as miscellaneous lesser functions.

Source: Bureau of Reclamation (1974).

development of both effective social service units and related comprehensive land use plans. The need is increased greatly because of the rapid rate of growth. In spite of opposition to anticipated restrictions on individual freedoms, people seem to be recognizing that only through effective planning can orderly patterns of growth be maintained and the broad range of human needs be met. As a result of this study, it is recommended that all counties and towns expecting to experience population growth from coal development create citizen groups to study the problems likely to result. Further, the counties and the larger towns should seek funds, or be provided with funds, to enable employment of both full-time planners and short-term consultants. Once these steps have been taken, planning boards and planners from all units of government will probably find it helpful to set up procedures for sharing experiences and consulting on common problems. Local planning activities should not replace State and regional planning; but, during times of highly localized population boom, resources and energies have to be concentrated where the difficulties are.

During times of rapid population growth, emphasis is placed on the value of qualified, full-time personnel to prepare and help implement plans. Part-time nonprofessional citizens, however concerned, do not have the technical capability needed to develop plans for handling the expected growth in the localities studied. However, the input of these citizens as participants on planning boards is essential. They provide the preliminary understanding and balance of local values that is necessary before plans can be drawn.

Full-time professional personnel are also recommended as a means of providing continuity in implementation that cannot usually be provided by consulting firms.

The creation of viable planning organizations is a matter of highest priority in all the counties surveyed. Although there are planning boards in some of the counties, they do not have the staff capability necessary to deal with problems of greatly increased population growth. Since local planning bodies (working together with local elected officials) are believed to have a central role to play in refining community priorities and developing plans, the Center for Interdisciplinary Studies and the Bureau of Reclamation consider that the suggestions contained in their preliminary survey should be simply advisory. They regard their findings as a seed from which local planning activities may grow. Under restraint of this intent, the following structural changes in local and county governments are recommended.

Streamlining of County and Local Governments

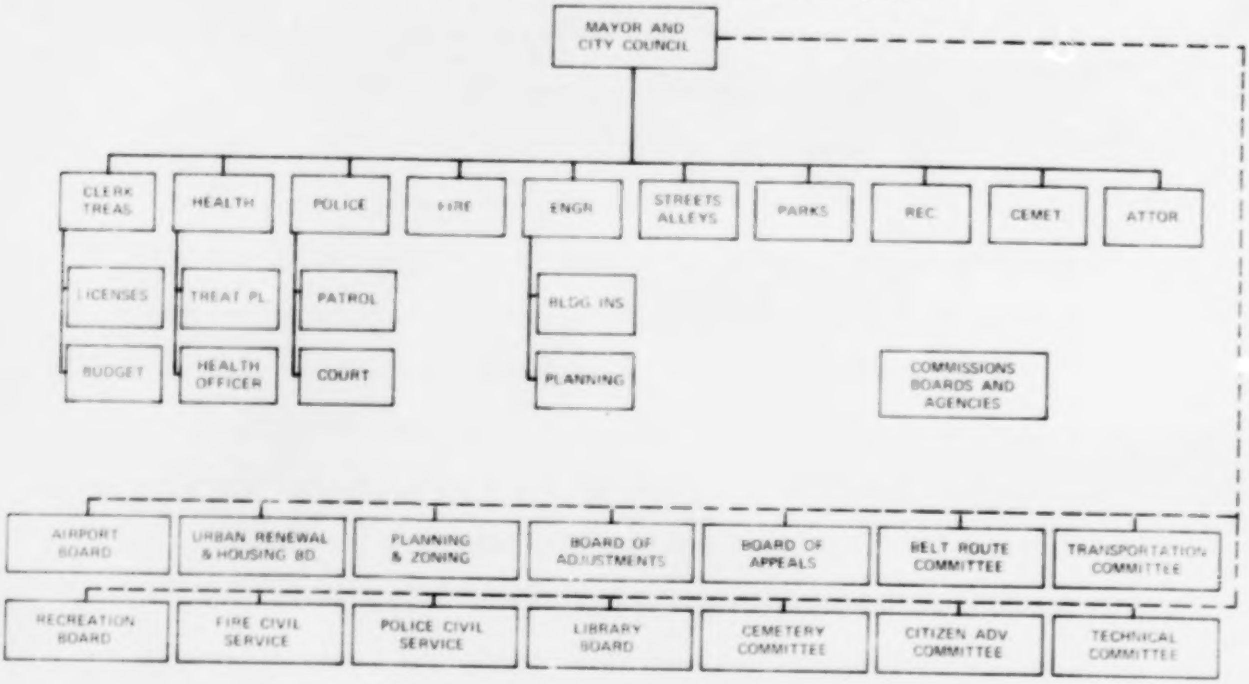
The first recommendation arises from the conclusion that local and county governments are structurally unprepared to deal with the problems expected to result from coal development. Wyoming has recently passed the Joint Powers Act that provides a mechanism for cities, counties, and other political subdivisions to provide public services on a joint basis. The intent of this legislation is to provide a mechanism for a more effective delivery of public services at the local level. In Montana, the local governmental option process now being set in motion should enable the State's counties and towns to make the necessary changes. In the other States, special State legislation will be required.

As a means of providing an effective mechanism, it is recommended that these units of government be given greater autonomous legislative authority (independent of specific authorization from the State legislature) and greater authority over county administrative procedures. Suggesting that fragmentation of county administration needs to be reduced and the chain of command clarified, the report proposes that administrative officials (including sheriffs) be appointed by the county commissioners, rather than elected independently. Through this change, the county commissioners may be given the authority to direct and coordinate many county governmental activities and to mobilize county personnel and resources according to the priorities they establish. Also, as a result of this change, the commissioners will be more directly accountable (Bureau of Reclamation, 1974).

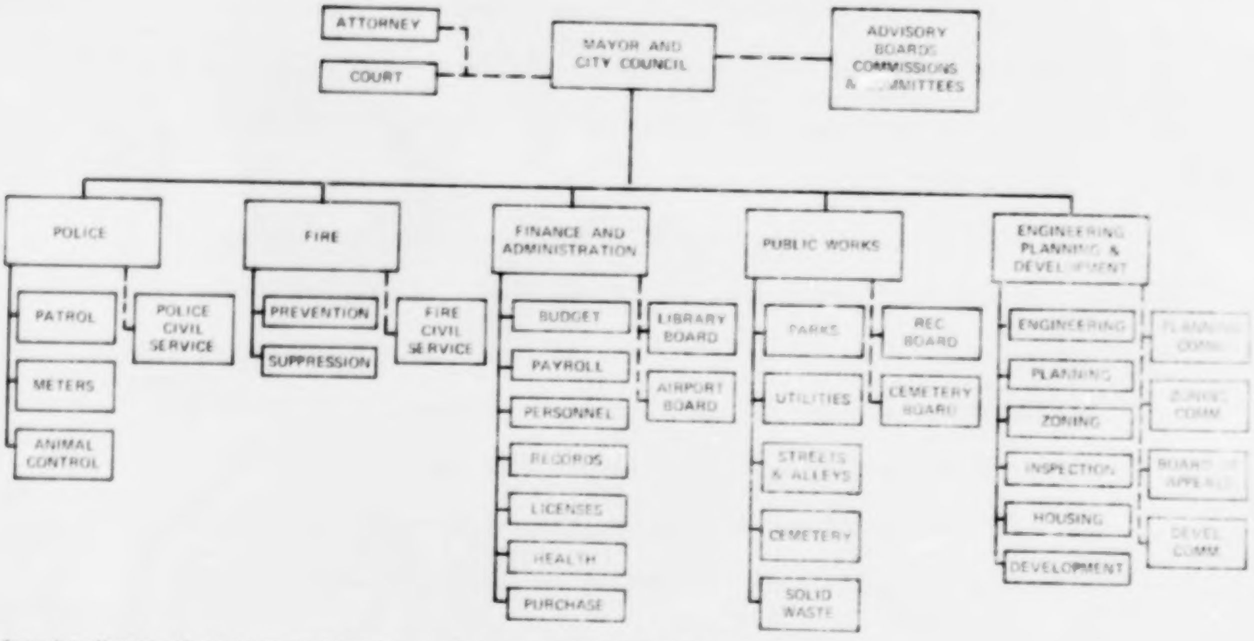
At the local level, several of the towns that are likely to experience substantial population impact may also feel the need to change their organizational structures (see Figure 4 showing changes recently made in Rock Springs, Wyoming). Further, towns that currently are unable to support a full-time mayor may find it necessary to seek funds so that the mayor can devote full time to directing the activities related to the increased amount of city business.

FIGURE 4 – Possible Revision of Local Government (as implemented in Rock Springs, Wyoming)

Previous Pattern of Municipal Organization in Rock Springs


MAYOR AND CITY COUNCIL
CLERK TREAS
HEALTH
POLICE
FIRE
ENGR
STREETS ALLEYS
PARKS
REC
CEMET
ATTOR
LICENSES
BUDGET
TREAT PL
HEALTH OFFICER
PATROL
COURT
BLDG INS
PLANNING
COMMISSIONS BOARDS AND AGENCIES
AIRPORT BOARD
URBAN RENEWAL & HOUSING BD
PLANNING & ZONING
BOARD OF ADJUSTMENTS
BOARD OF APPEALS
BELT ROUTE COMMITTEE
TRANSPORTATION COMMITTEE
RECREATION BOARD
FIRE CIVIL SERVICE
POLICE CIVIL SERVICE
LIBRARY BOARD
CEMETERY COMMITTEE
CITIZEN ADV COMMITTEE
TECHNICAL COMMITTEE

Newly Adopted Format of Municipal Organization in Rock Springs


ATTORNEY
COURT
MAYOR AND CITY COUNCIL
ADVISORY BOARDS COMMISSIONS & COMMITTEES
POLICE
PATROL
METERS
ANIMAL CONTROL
POLICE CIVIL SERVICE
FIRE
PREVENTION
SUPPRESSION
FIRE CIVIL SERVICE
FINANCE AND ADMINISTRATION
BUDGET
PAYROLL
PERSONNEL
RECORDS
LICENSES
HEALTH
PURCHASE
LIBRARY BOARD
AIRPORT BOARD
PUBLIC WORKS
PARKS
UTILITIES
STREETS & ALLEYS
CEMETERY
SOLID WASTE
REC BOARD
CEMETERY BOARD
ENGINEERING PLANNING & DEVELOPMENT
ENGINEERING
PLANNING
ZONING
INSPECTION
HOUSING
DEVELOPMENT
PLANNING COMM
ZONING COMM
BOARD OF APPEALS
DEVEL COMM

Source: Nunn, Thomas H. and Thomas T. Bechtel, *Rock Springs Community Development Study 1973*, October 15, 1973, Wyoming

To improve coordination and the accessibility and public visibility of governmental operations and service agencies, the Bureau of Reclamation (1974) study recommends that counties consider the creation of Governmental Service Centers in the county seat. These centers would house offices of all local governmental service agencies, as well as the administrative units of both county government and local government. This suggestion is made to enable the local governments to deal more effectively with the problems that seem likely to result from extremely rapid population influx, particularly the dramatic "boom and bust" pressures that will occur during plant construction. Related to this is the need to improve governmental services during times of growth and turmoil to compensate for a possible breakdown in the capability of more informal nongovernmental services. However, the provision of unified services in an easily accessible central location is not expected to totally supplant the need for field stations and home visits. If the fabric of community is to be maintained, the service needs of the residents, the communities, and short-term construction personnel, who may be living in outlying temporary trailer communities, must be met. The needs of these groups will continue to require traveling service providers. However, the needs of large camps of short-term construction workers might be met through the use of temporary trailer-housed service centers, capable of moving with the construction peaks from one location to another.

Health Care

Health care and hospital services will need improvements to handle expected population growth under any level of development. In five of the six counties surveyed, more people were concerned about the shortage of physicians than any other service need. The Northern Great Plains region is noticeably deficient in the number of physicians per 100,000 inhabitants (Table 18). Only two universities in the five-State area have medical schools, and both are located in Omaha, Nebraska, many miles from the expected areas of impact. It is necessary to recruit heavily outside the region to secure physicians. Thus far, the size of the counties' population base has been a significant handicap in attracting, maintaining and expanding health service facilities and personnel.

The major difficulty affecting health care in every surveyed county except Sheridan County was the insufficient supply of physicians and other health care personnel. Either because of lack of confidence in local physicians or because of inability to get appointments, local residents in most of the studied counties frequently travel elsewhere for medical treatment. Only the city of Sheridan, with its pleasant environment and proximity to recreation areas, seems to attract many physicians.

In the absence of a widely dispersed supply of qualified physicians, county ambulance service takes on more critical importance. The ambulance service in Campbell County, for example, transports many patients from Gillette to hospitals in Casper and Sheridan. This ambulance service is supplemented by a privately operated air ambulance, which transports patients mostly to Sheridan and Billings.

Table 18--Location of active physicians (M.D. and D.O.) in relation to population: December 31, 1967

State	Population	Physicians			All active physicians per 100,000 population
		Total	Federal	Non-Federal	
	1,000				
Montana	699	766	82	684	110
Nebraska	1,443	1,768	140	1,628	123
North Dakota	632	653	90	563	103
South Dakota	668	631	93	538	94
Wyoming	319	340	38	302	107
Region	3,761	4,158	443	3,715	111
United States	197,863	299,724	24,187	275,537	151

Source: Health Resources Statistics, Health Manpower and Health Facilities, 1969, Public Health Service, U.S. Department of Health, Education and Welfare, May 1970. G.P.O. Washington, D.C.

If counties find that physician recruitment efforts are unproductive, they may wish to concentrate on providing fast ambulance service to regional hospitals instead. Under such a revised ordering of priorities, local county hospitals would concentrate on out-patient care, and transfer most in-patient work to regional hospitals in cities such as Casper, Sheridan, Billings, Bismarck, and Minot. Perhaps this solution will not be considered ideal by many proud communities, but it may be realistic.

Another means of expanding the available physician supply is through the employment of physician assistants and through the development of ample public health nursing agencies. In Campbell County, the public health nurses have departed from the concept of nursing for the indigent needy, and have become essentially physician aides in many of their activities. In Rock Springs (a town outside the study area), seven of the nine local physicians have established a medical services corporation, and have collectively hired three trained MEDEX physician assistants who are responsible for managing the hospital emergency room. Although these assistants work under the supervision of the physicians, their presence prevents a physician from having to be constantly on call at the hospital for emergencies. Health care administrators in Sweetwater County consider these physicians' assistants to be well trained and highly competent in emergency medical procedures.

Another need for emergency health care professionals is at the plant sites. Industrial nurses and ambulance personnel will be needed at all major construction sites. Highly specialized training in industrial accidents and in transporting industrial accident victims from inaccessible places is required of persons filling these positions. For this reason, recruitment may not be any easier for this skill than for any other highly specialized construction-related skill. It is probably not too soon to begin encouraging local young people to consider careers in this field.

Other health care services are often closely related to social service work. Many mental health services, for example, are more nearly social services than medical services. The most effective mental health organizations in the surveyed counties are those that have been most actively involved in seeking grant funding to provide a variety of professional personnel in each major community. Although many of the less medically oriented types of mental health services could be effectively integrated with other social services, and thus disassociated from the stigma attached to the term "mental health," existing mental health organizations in all counties are performing a valuable service. The major problem for the future is in providing enough of these kinds of services to accommodate the needs of a rapidly increasing population.

Studies of "boom" areas suggest that adaptation and adjustment problems in health care intensify during periods of rapid growth. Present funding arrangements that require continuous grant applications on the part of an agency may not provide the level of improvement that will be needed soon. Partial solutions to this funding difficulty may be illustrated by two ongoing efforts of the Northeast Wyoming Mental Health Center. This agency is currently involved in discussion to initiate contractual arrangements with the local Welfare Department to provide social services to welfare clients. These discussions arose from the discovery that 40 percent of the mental health agency's clientele are eligible for welfare services. At the same time, the social welfare agency has been returning Federal and State funds that were budgeted to provide social services to these very same people! Also, the Northeast Wyoming Mental Health Center and one of the energy companies are discussing the desirability of drawing a contract for provision of whatever mental health services the company's employees may need. If new employees brought into the area by the energy company strain locally available services beyond their capability, Mental Health Center staff believe the company should provide funds so that these services can be extended to meet the new demands.

Newcomers, however, are not the only citizens who will need assured access to counseling services. Long-term residents will also have to make abrupt adjustments as the result of coal development. The elderly will be among those most affected. Provision should be made to help elderly people on fixed incomes from suffering unduly as a result of impact-related economic and social difficulties.

Home health care services could be provided for citizens who do not want to be placed in nursing homes. However, adequate retirement and nursing home facilities should be provided for those residents who need or prefer institutional care. All surveyed counties now have these facilities, or are in the process of providing them, but none of the facilities have much room for additional patients. Only Campbell County has plans to construct retirement apartments near the nursing home-hospital complex so that elderly people can maintain their independence with relative security, knowing that immediate medical care is available if they need it.

There may be a need for comprehensive health planning organizations in the impact areas. There are such organizations elsewhere. However, they too need to be strengthened to be effective mechanisms for planning future health service needs. Providing adequate, accessable, low-cost health services to the region's elderly and those on fixed incomes should be given high priority in any future health planning decision. Accessability could be provided by outreach programs or mobile clinics. Welfare programs, despite the social stigma, could be considered when health service units are planned. The higher wages paid to construction personnel will lessen the buying power of those inhabitants on limited incomes, thus making it more difficult for them to secure adequate health care, as well as other services.

Welfare Services

Generally, welfare services are supplied under provisions of State and Federal legislation, and most agencies do not vary in organizational structure from county to county. Multicounty organizational arrangements do vary, however, and so does staff size. For example, welfare services in Sheridan and Campbell Counties are provided by a multicounty welfare department with main offices in Sheridan. The Sheridan area is staffed more fully than the Gillette office (Campbell County), even though both cities and both counties are similar in size. Partly, the large number of available jobs in Campbell County keeps welfare needs low; but also, the large group of elderly people living in Sheridan generates greater welfare needs.

The situation in Gillette, which has developed as a result of the oil boom there, seems somewhat different from the situation that has resulted from the construction boom in Rock Springs, Wyoming. In Rock Springs, the Sweetwater County Welfare Department operates with a 17-member staff, compared to the 4-member staff in Gillette. Although Sweetwater County is larger than Campbell County in both population and land area, it is not four times as large in either respect. The difference in staff size seems to result, at least partly, from a difference in the character of the case work. The Sweetwater County welfare director reports that his workers are constantly busy with short-term case work. As an example of this type of problem, he cites the situation of a construction worker from Tennessee who decided he did not like working in Wyoming and took off for Tennessee to seek a new job, leaving his wife and family in Rock Springs. Immediately, the woman came to the Welfare Office to seek assistance. It is understood that once the husband settles in a new job back in Tennessee, he may send for his family. But for the moment, the family is abandoned and in need.

In other cases, women and children are left permanently in Rock Springs without means of support. The Welfare Director feels that Rock Springs' problems do not arise so much from the number of people on welfare at any given time as from the number of people the social workers must work with daily because of the instability of social conditions in the area. Although Rock Springs is not in the study area, it provides some indications of the scope of the public service needs, once industrial activities begin in the six studied counties.

Education

The provision of school facilities in a "boom" area is one of the most difficult problems to be faced by those counties and communities where rapid coal development is expected. Some of the initial growth in construction-phase population will be followed by a more permanent population of operating personnel. Schools can be built to meet the needs of the future permanent population, and thus cover part of the classroom needs of construction-related families. However, some classrooms will ultimately have to be made available on a short-term basis during peak construction activities. To meet these needs without excessive capital expenditure will require temporary mobile classrooms that can be moved to other "boom" areas as needed.

The space requirements in the study counties and the cost of additional educational facilities have been estimated (using 1970 as a base) by the Bureau of Reclamation (Table 19). Also, the Bureau has developed estimates of both the number of new personnel that will be needed and the budget increases necessary to pay their salaries (Table 20). Fluctuations in the number of needed teachers

Table 19--New classroom space and costs for selected counties, Scenario II

(1970 dollars)

State	County	Item	Unit	Total	1980	1985	2000
Montana	Big Horn	Classroom space	Sq. Ft.	211,000	21,000	54,000	136,000
		Cost	Dollars	7,385,000	735,000	1,890,000	4,760,000
Montana	Rosebud	Classroom space	Sq. Ft.	440,000	78,000	158,000	204,000
		Cost	Dollars	15,400,000	2,730,000	5,530,000	7,140,000
North Dakota	Mercer	Classroom space	Sq. Ft.	517,000	42,000	173,000	302,000
		Cost	Dollars	18,095,000	1,470,000	6,055,000	10,570,000
North Dakota	Oliver	Classroom space	Sq. Ft.	65,000	19,000	0	46,000
		Cost	Dollars	2,275,000	665,000	0	1,610,000
Wyoming	Campbell	Classroom space	Sq. Ft.	450,000	217,000	148,000	85,000
		Cost	Dollars	15,750,000	7,595,000	5,180,000	2,975,000
Wyoming	Sheridan	Classroom space	Sq. Ft.	738,000	139,000	278,000	321,000
		Cost	Dollars	25,830,000	4,865,000	9,730,000	11,235,000

Source: Bureau of Reclamation (1974).

Table 20--Added personnel and salary requirements for education in selected counties, Scenario II

(1970 dollars)

State	County	Item	Unit	Total	1980	1985	2000
Montana	Big Horn	School employees	Number	132	9	32	91
		Annual salaries	Dollars	1,320,000	90,000	320,000	910,000
Montana	Rosebud	School employees	Number	334	34	105	195
		Annual salaries	Dollars	3,340,000	340,000	1,050,000	1,950,000
North Dakota	Mercer	School employees	Number	345	19	96	230
		Annual salaries	Dollars	3,450,000	190,000	960,000	2,300,000
North Dakota	Oliver	School employees	Number	46	9	8	29
		Annual salaries	Dollars	460,000	90,000	80,000	290,000
Wyoming	Campbell	School employees	Number	460	98	163	199
		Annual salaries	Dollars	4,600,000	980,000	1,630,000	1,990,000
Wyoming	Sheridan	School employees	Number	572	61	184	327
		Annual salaries	Dollars	5,720,000	610,000	1,840,000	3,270,000

Source: Bureau of Reclamation (1974).

and their salary requirements will depend on the scheduling of construction activities and the size of the work force during the various years.

In Campbell County, local ability to deal with problems associated with rapid growth has been markedly improved through the consolidation of all school districts into one county-wide district, under the direction of a highly experienced professional superintendent. Through this administrative arrangement, resources can be deployed more equitably, both to maintain educational quality in all schools and to avoid the worst consequences of "boom" development in one particular area of the county. Even more important, consolidation of the school districts enables the tax benefits of an industrial plant in one part of the county to be shared among all the schools.* Through consolidation, the county has been able to assemble a collection of mobile classrooms that can be moved as needed to any school in the county. Because of this unification, specialized services can be offered to all schools. This would not have been possible if smaller, individual school districts within the county had to fund these on their own.

Fire Protection

Just as it has proved effective for Campbell County to unify school districts into a county-wide school system, it has also proved effective to unify all fire protection districts into one county-wide service. This unified system has improved the efficiency, the economy, and especially the coordination of the county's fire protection services. Such a system should be considered in all the other impact areas as well. Complete details of the Campbell County fire protection program can be found in the Bureau of Reclamation study (1974).

---

* In Campbell County, consolidation of the school system has not meant substantial reduction in the number of schools. In fact, because of travel distance, one school is kept open for one student. However, if the school district had a smaller tax base for support of its program, this might not be possible.

Another possibility suggests that the Montana counties relieve their sheriffs from responsibility for rural fire protection services. Further, as development proceeds, most fire companies will very likely need to upgrade their available equipment and develop a combination of paid and volunteer staff. At present, most fire-fighting organizations are staffed entirely by volunteers. Only Sheridan County and the City of Sheridan maintain full-time, paid fire crews.

Law Enforcement

Generally, as population increases in a "boom" area, the need for law enforcement service increases. Both Rosebud County, Montana, and Sweetwater County, Wyoming, have experienced such an increase since construction activities on thermoelectric generating facilities began. For example, citations of all types in Rock Springs increased 40 percent from 1972 to 1973, resulting in an increase of fine revenues from $43,322 to $60,025.* In other words, per capita citations increased at a faster rate than population. The capability of local law enforcement officials was improved by a consolidation of the Sheriff's Department with the City Police

---

* Speeding and public intoxication citations nearly doubled during the period.

Department in Forsyth. The City Police Chief was appointed Sheriff by the County Commissioners, and assumed responsibility for the integration of the two departments. Without question, a similar integration of county and city police would be worth consideration in other surveyed counties. Through such a step, duplication of jail, administrative facilities, and radio equipment is avoided. Once a unified system of radio dispatch is created, that switchboard can become the center for all emergency radio communication in the county. Fire and ambulance dispatch can be coordinated through the same switchboard.

Finally, closer cooperative arrangements and cross-deputization between Sheriff's Departments and Indian reservation police should be considered in order to eliminate some forms of jurisdictional overlaps. In the process the overall law enforcement capability of the affected areas would be improved.

Highways and Roads

Highway expenditures are more difficult to estimate than those services that have a measurable relationship to the population. The major highway and road needs in the counties surveyed will be for access roads to new plant and mine locations. Because these sites are expected to be substantial distances from existing roads, construction of access roads will be costly. Given already expressed concerns about the availability of income with which to provide needed services, a question can be raised as to the appropriateness of county-financed roads to these locations. Perhaps this is a cost that should be borne by the companies directly as part of their initial capital investment. Certainly, if traffic flows to the Colstrip and Jim Bridger plants are any indication, dirt or scoria plant-access roads cannot be considered viable.

In addition to plant and mine access roads, several highways serving the most heavily impacted counties will have to be upgraded. Route #315, which connects Colstrip to I-94 west of Forsyth, has already generated much local demand for improvement. After plant and mine development begins in the Ashland area of Rosebud County, improvements to Route #212 will be desirable, possibly over the whole distance from Alzada to Hardin. Also, at that time, gravel roads from Ashland to Miles City, from Ashland to Forsyth, from Busby through Kirby to Decker, and from Ashland through Birney to Decker and Sheridan will presumably require paving.

If the level of traffic on the roads from Point of Rocks in Sweetwater County, Wyoming, to the Jim Bridger plant is any indication of future traffic in the areas where plants are being constructued, road standards should be set substantially higher than they usually are for paved farm-to-market roads. In Big Horn County, farm-to-market road standards have proven insufficient for the weight loads of the mine construction equipment hauled over them. Maintenance costs over a short section of paved road west from Hardin have increased substantially since development of the Sarpy Creek minesite began. To offset these costs, the Big Horn County Commissioners have established a permit system for vehicles over a certain weight. The modest fee schedule is patterned after the State fee schedule for heavy vehicles. Although the resultant revenues do not come close to covering the cost of repairing the roads, it helps. Perhaps in the future, rates could be increased.

Inasmuch as most of the coal tax revenue (particularly in Montana) now accrues to the State, another considered alternative is to have the State Highway Department assume responsibility for all secondary roads in coal development areas. This proposal is especially appealing in view of recent increases in the cost of road paving. Wyoming, for example, has an Industrial Road Fund that provides State aid to counties on a fifty-fifty "matching" fund basis for industrial roads. Often the county "match" is provided by the firm needing the road. If counties handle all increased paving themselves, it has been estimated they might have to spend as much as $25,000 per mile.

Public Transportation Facilities

As population increases in the study areas, improved commercial bus and airline service may be necessary. Also, but not as likely, if existing patterns provide any guide, will be commuter buses to plant and mine sites. Even with increased gasoline costs, wage levels seem to be high enough to offset most of the pressure on workers at the Jim Bridger plant to use available commuter buses. Most workers seem to prefer their own cars, although in some cases workers travel in carpools.

A situation in North Dakota may become a problem in other places. Many people in the Oliver and Mercer County areas wanted increased bus service to and from Bismarck. At present, however, it is not possible to go to Bismarck by bus and return in the same day. Thus, actual demand will not arise (even though latent demand exists) until service increases. On the other hand, service will not increase until real demand is greater.

Municipal Services

In many of the communities surveyed, municipal sewer and water facilities are either barely adequate or are adequate for only a small increment of growth. Necessary extensions of sewer and water lines, improvement of treatment plants, and increases in storage capacity will be costly to the communities concerned. In some cases, new sources of water will have to be sought. For example, the city of Gillette is considering abandoning its present source of poor quality water (from wells) and replacing it with water piped from one of the reservoirs that will serve new local industry. Presumably, the water will come in the same pipeline that transports the industrial water.

Those towns expecting to grow beyond 10,000 people may want to begin planning for the construction of sewage treatment facilities to replace their present lagoon systems. The larger cities of Gillette* and, particularly, Sheridan will need to plan expansion of existing sewage treatment plants as growth proceeds. Again, costly capital expenditures will be involved. The specific costs of sewer and water facilities, like the cost of streets, storm sewers, and garbage collection, cannot be projected until specific land use plans are drawn for each community.

---

* Even Gillette's new plant will be unequal to the anticipated load before the end of the century.

Recreation Facilities

In all the counties surveyed, the desire for expanded recreation facilities aroused greater public interest than all other surveyed concerns. The urban and town populations in all surveyed counties seem to want increased recreation facilities. The question arises whether desire for facilities is equivalent to need. The question is largely philosophical, inasmuch as the relationship between recreation facilities, the quality of life, and general community welfare is largely unmeasurable. Nevertheless, some studies suggest that recreation opportunities reflect concern on the part of the whole community for the welfare of individual members and, therefore, reduce the possibility of alienation and destructive behavior, particularly among younger citizens.

Cost of Services

To develop meaningful cost data for communities and counties would require more study of such items as the services provided by various levels of local government and the various methods of financing the required services. This information is not fully available at this time. Generally, as the population increases and the quantity of government service requirements increase, two effects can be anticipated. First, as the population grows, a wider variety of services would be demanded because of the increased complexity and changes in social groups making up the new population. Secondly, as the population grows, the total cost of local government operations will increase. (Per capita costs may ultimately decrease in counties where major industrial development will occur.)

In order to give a rough approximation of future county operating costs, the Bureau of Reclamation study projected the operating budgets of the six counties at the same per capita rate as prevailed for fiscal year 1974 in each county. Estimates of future county budget requirements are shown for each county and scenario in Table 21. Inflationary trends have not been included so these budget estimates could be considered as 1974 dollars.

Funds to meet county budget obligations come from several sources such as county purpose tax levies, reserve funds, revenue sharing, and license fees. The percent of county budget requirements funded through county purpose levies varies from year to year, depending on the size of the proposed budget and the amount of funds anticipated from other sources (Table 22). A comparison of potential county tax revenues from coal mining and industrial development, with projected increased budget requirements for Scenario II, indicates that increased tax revenues could be sufficiently high to exceed the budget requirements in Montana and North Dakota counties (Table 23). In Campbell County, Wyoming, tax revenues could cover a major portion of the increased county budget requirements. However, Sheridan County, Wyoming, would probably have a severe deficit.

Of course, this comparison only considers the direct tax revenue from coal mining and industrial development at current levies. The increased tax base from supporting business investments, housing investments, and other sources would add to the total potential tax base for each county. Future county levies could probably be reduced in some counties. The major problem of providing services will

Table 21--Approximate county budget requirements, selected counties, by scenarios

State County Scenario	F.Y. 1974	1980	1985	2000
		Million dollars		
Montana:				
Big Horn:	1.5			
Scenario I		1.60	1.60	1.70
II		1.62	2.07	2.90
III		1.84	2.88	5.49
Rosebud:	2.2			
Scenario I		3.50	3.50	3.78
II		3.50	5.59	8.05
III		5.32	11.53	15.86
North Dakota:				
Mercer:	1.2			
Scenario I		1.56	1.56	1.85
II		1.56	2.76	4.74
III		3.96	6.36	10.68
Oliver:	.5			
Scenario I		.76	.76	.76
II		.76	.76	1.10
III		.76	.76	1.55
Wyoming:				
Campbell:	3.4			
Scenario I		4.90	5.00	5.51
II		5.78	7.24	7.89
III		6.66	13.06	20.20
Sheridan:	3.2			
Scenario I		3.52	3.97	4.13
II		4.22	5.89	7.65
III		4.96	7.90	11.49

Source: Bureau of Reclamation (1974).

be during the construction period and in early development years, when the tax base will not have reached a sufficiently high level to provide the required revenue.

Table 22--Percent of county budget funded by county purpose tax levies, selected counties, fiscal year 1974

State	County	Percent
Montana	Big Horn	42
	Rosebud	42
North Dakota	Mercer	48
	Oliver	20
Wyoming	Campbell	44
	Sheridan	33

Source: Bureau of Reclamation (1974).

Conclusion

The total cost of providing public services will increase with the population growth attendant to coal development. For the cities and counties affected, this will mean additional burdens and a change in expenditure priorities in a number of cases. The major problem, however, will be to provide the services when needed. The potential development lags (funding availability to service availability) will be the most difficult and important obstacle to overcome.

Spatial, Temporal, and Jurisdictional Disparities

The distribution and timing of revenue availability and service demand will determine the capability of localities to meet rapid development needs. Various local, State, and Federal policies

Table 23--Estimated increase in county budget requirements and increased county tax revenues over 1974 level, selected counties, Scenario II

State County Item	1980	1985	2000
		Million dollars	
Montana:			
Big Horn:			
County budget 1/	.12	.57	1.40
Tax revenue 2/	.72	3.20	6.76
Rosebud:			
County budget	1.30	3.39	5.85
Tax revenue	2.73	7.02	7.94
North Dakota:			
Mercer:			
County budget	.36	1.56	3.54
Tax revenue	4.53	8.57	14.37
Oliver:			
County budget	.26	.26	.60
Tax revenue	1.26	1.63	4.13
Wyoming:			
Campbell:			
County budget	2.38	3.84	4.49
Tax revenue	1.01	2.78	3.90
Sheridan:			
County budget	1.02	2.69	4.45
Tax revenue	.03	.07	.36

1/ Increase over 1974 budget level.

2/ Potential county tax revenue from mining and industrial development at current tax levy. Does not reflect increases in supporting business investments, housing investments, etc.

Source: Bureau of Reclamation (1974).

create jurisdictional overlaps and gaps that can and do result in hardships for communities faced with rapid development. In some instances, localities and States may be forced to expand their infrastructure as a result of developments outside of their jurisdictional control. Therefore, State and Federal action may be needed to assist rapidly developing localities.

Such actions as increasing the local government's share of tax revenues derived from mining activities in their area, creating predevelopment loans to counties and cities to be impacted by coal development, and developing full-time professional planning staffs would provide some of the tools needed by local governments to effectively deal with rapid development.

Some Problems in Revenue and Service Requirements

The degree of impact will vary for each type of governmental body and among the various counties. To effectively deal with the needs that have been broadly projected, officials at all levels of government will need to secure funds to expand and add facilities, as well as hire additional personnel. The major obstacle is that the tax base and the funds generated grow at a pace slower than the need for the service they support. Table 24 depicts the dilemma of two counties, Sheridan in Wyoming and Big Horn in Montana. Presumably, many coal miners and plant personnel will select Sheridan (city) as their place of residence while working in the coal fields just across the State line in Big Horn County, Montana. The city and county of Sheridan will be called on to provide the needed

Table 24--School budgets versus tax revenue: Increases over 1974, Big Horn County, Montana and Sheridan County, Wyoming, Scenario II

$1,000

	Big Horn County				Sheridan County			
	School	Tax	Deficit		School	Tax	Deficit	
Year	Budget	Revenue	Annual	Cumulative	Budget	Revenue	Annual	Cumulative
1975	3	0	3	3	28	0	28	28
1976	27	0	27	30	58	0	58	86
1977	7	0	7	37	18	0	18	104
1978	7	0	7	44	18	0	18	122
1979	280	0	280	324	660	0	660	782
1980	624	1,164	0	--	2,283	116	2,167	2,949
1981	454	1,164	0	--	1,893	116	1,777	4,726
1982	514	1,164	0	--	2,033	116	1,917	6,643
1983	614	1,164	0	--	2,263	116	2,147	8,790
1984	491	1,164	0	--	1,965	116	1,849	10,639
1985	1,028	6,381	0	--	4,418	233	4,185	14,824
1986	1,068	6,381	0	--	4,528	233	4,295	19,119
1987	1,018	6,381	0	--	4,398	233	4,165	23,284
1988	1,138	6,381	0	--	4,678	233	4,445	27,729
1989	1,111	6,381	0	--	4,626	233	4,393	32,122
1990	787	6,381	0	--	3,453	233	3,220	35,342

-- = Not applicable.

Source: Bureau of Reclamation (1974).

social services generated by the employees who work in Montana. Yet, Sheridan will not receive any tax benefits from the exploitation of Montana coal.

As Table 24 indicates, certain counties and communities will be seriously burdened in a short time, and will not have the resources to support the needed services. Construction activites and the attendant rapid influx of workers and families will create an immediate strain on the service delivery systems of the areas involved. The methods available to finance the increased services will vary according to the service required. County and local school districts may have to raise their mill levies in the short run to provide immediate relief, but the main benefit of increased revenue will occur in the long run. This would probably not be true for communities (towns and cities) where the only increase in the tax base would be from internal growth. The communities would only benefit directly if an industrial complex was contained within its corporate limits.

Expansion of community services, such as water and sewer services and streets, can be accomplished through special improvement districts when the plant capacity to expand is available. This would, when possible, provide a method whereby the persons demanding and receiving the services would pay for them. Generally, this would mean that construction personnel who will be in the region a short time would pay little toward these needs. In most cases, the communities to be impacted do not have the capacity to expand their sewer and water plants.

School districts that encompass coal developments will be hard pressed to provide the physical school plant capacity during industrial construction periods and in the early operating years. It takes time to plan for new school facilities as well as other services, and more time to build the required facilities. To provide these services and facilities will require a lead time of 4 to 5 years. School districts, as well as other governmental bodies, cannot plan on hearsay coal developments. It is imperative that energy companies cooperate by making their development plans known in order to provide as much lead time as possible. This will give communities and governments sufficient time to have the facilities available at or near the time they are required. The communities affected will benefit by not being "over-run" with crisis planning, and the industrial development companies will be able to insure adequate social services for their employees. An open and frank discussion of planned developments would benefit all. If the communities, counties, and States do not receive adequate information from the development companies voluntarily, some type of legislative action may be needed. This information could be required in the Environmental Impact Statement, Water Application Permit, or some other type of document.

Methods of Alleviating Disparities

Of utmost importance in alleviating disparities among local jurisdictions is legislation to alter existing revenue problems, and planning to avoid or minimize disparities. This is not possible in all cases. As discussed earlier, an open and frank discussion of planned coal and associated developments would allow legislators and planners sufficient time to take the steps necessary to reduce impacts.

Legislation

The legislative process is not always smooth, and no legislation can satisfy everyone. However, it is through the legislative process, at all levels of government, that decisions and ideas become law. Many laws have outlived their usefulness, either through technological change or institutional reality. Other laws, policies, and decisions, whether people like to admit it, are sometimes ineffective or regressive. In certain respects, the tax laws of the various States and the Federal Government do not serve the people in the ways they should. If such is the case, these laws should be changed. The following examples illustrate revenue disparities in State-local revenue distribution, and suggest legislation that could alleviate them.

The Montana Strip Coal Mine License levies a tax based on the BTU rating of the coal. The higher the BTU rate, the higher the tax. Counties in which the coal is mined receive 3 cents per ton for all coal mined in that county. Prior to the 1974 session of the Montana Legislature, the county share was 1 cent per ton. Actions in other States, such as those recently enacted by the Montana Legislature, would help the localities secure the revenues to finance the needed services on a timely basis.

Federal legislation could be enacted that recognizes Federal responsibility to aid communities affected by Federal energy policies.

This concept has a precedence in defense programs, and could be applied to energy development programs. However, State and local governments should not depend solely on Federal assistance programs. Federal Government subsidies may reduce the incentive for local and State governments to amend their tax structures and provide legislation necessary to reduce revenue and service lags.

In other instances, new industries locating within the State receive tax exemption status for several years. Montana, for example, has a special classification for computing the taxable value of new industrial property. This classification allows the property to have its taxable value computed at 7 percent of the assessed value for the first 3 years of economic life. Thereafter, the taxable value is computed at 30 percent of the assessed value. The assessed value is computed as 40 percent of the cost of the facilities. Any person, corporation, firm, or partnership seeking use of this classification for its property in computing property taxes has to make application to the State Board of Equalization for approval. This means that new power plants, gasification plants, and coal mines might not pay their full share of property taxes during the first 3 years of operation.

North Dakota allows exemptions for new industries or business under the Municipal Industrial Development Act. A new industry or business may be granted partial or complete property and income tax exemptions for up to 5 years. The municipality in which the industry or business is located has to make application to the State Board of Equalization for approval. In order to keep the property tax exemption from eroding the tax base of the local municipality and taxing districts, the law provides that the ad valorem tax exemption be limited to the valuation over and above the assessed valuation placed on the property in the preceding assessment period. In determining whether or not an exemption will be granted, the city or county and the State Board of Equalization determines whether the tax exemption will give unfair advantage to the new enterprise. Essentially, this means that the new industry may be exempt from paying property taxes during the first 5 years of operation.

The above examples allow for the exemption and reduction of taxes as an incentive for an industry to locate within the jurisdiction's boundaries. These policies still have merit. However, it is doubtful that, when this type of legislation was passed, the States could have anticipated large-scale extractive industrial development. The industries will benefit considerably by paying reduced taxes to the State and communities; however, the communities will have to provide more services than the revenue received can support.

Altering the taxation process normally involves a considerable delay in reacting to changes of circumstances. Time lags between the beginning of a development, its assessment, the levy of taxes on it, and the collection of these taxes may be 2 or more years. During that interval, there will be increased demands on the infrastructure and its services. Taxation during development may be inequitable between existing residents and newcomers. Legislation in some form may be required to provide financial assistance to the affected communities.

Local and State legislation and possible constitutional changes may be required to allow for prepayment or early payment of taxes by the coal mine or coal utilization facilities. Several firms have expressed a willingness to make early payments. However, legal barriers may prevent either collection or distribution of these payments, or both. The States could also loan money to the impacted areas until revenues exceed outlays, thereby permitting the impacted areas to construct facilities when they are needed.

Whatever the best cost-sharing formula may be, State and Federal policymakers should study the desirability of passing all coal-related increases in the cost of county and city government along to those who have generated the demand for coal. If this idea is accepted, the costs could be passed on either to coal consumers through appropriated taxes on coal production and conversion, or to the Nation as a whole through the provision of impact aid. This latter option is perhaps particularly cogent in light of the amount of Federal royalty income likely to be derived from Western coal mining.

Furthermore, the Federal Government should reconsider present leasing policies and the revenue-generating implications for the States and localities.

Federal Aid

Possibly, the Federal Government should take extra responsibility for sharply increased service costs if these costs result from abrupt readjustment in national energy policy. If the speed of development causes such rapid increases in the cost of county government that the local and State tax structure cannot handle them, perhaps the Federal Government should assume a greater role in financing local facilities and programs. Such aid should continue until the tax structure can be adjusted to reflect both a fair distribution of cost burdens and a smooth transition to whatever new arrangements may be legislated.

Even the tax income accruing to the States from coal development may not provide as much aid to the counties as they need. If the States are obliged to allocate general funds for this purpose, this would place an additional burden on the three States. In effect, the Nation would be asking these States not only to bear the hardships associated with rapid development of a nationally needed resource, but to finance sharply increased governmental costs as well. If cost increases were modest, they could be absorbed against the prospect of increased State and county tax income. But, if the costs are as great as present projections suggest, the traditional methods of State and local finance will not be able to bear the short-term burden without unreasonable sacrifice of the area residents.

Planning and Coordination

Another major item to be considered is identifying the problems, and the steps or methods needed to overcome or cope with them. At present, the need to create effective local full-time institutions for planning and for implementing the resultant plans is the most basic service need identified. After the basic planning institution is established, a plan or system should be formulated to search out the programs most beneficial to the areas concerned. There are over 1,200 Federal programs available that might assist communities. However, many local and State officials are not familiar with the programs, funding availability, or the procedure required to secure assistance.

In the area of Federal Aid and Planning and Coordination, attention should be given to the Federal Automated Career System (FACS). This System can provide referral of certain types of professional employees to State and local governments for detail assignments or for short-term task forces. This could be considered as one means of obtaining planning assistance.

Federal Regional Council and State agencies should assist each other and the localities involved in maximizing the use of appropriate and available programs. Such responsibilities may be incorporated into a State/local coordination planning body. Planning agencies then would be able to recommend the appropriate programs or the type of policies needed to alleviate funding lags, including changes in the tax structure.

Multicounty planning agencies could be established to deal with development problems that transcend county and State lines. Enabling State legislation may be required in some instances. Some counties may feel their planning options are being limited. Problems such as this will have to be worked out locally.

Problem Areas

Housing--In most communities in the rapidly developing coal areas, there is and will be a need for housing for the construction crews. These communities are not prepared to meet these housing needs. Mobile homes might be used as temporary solutions. However, they do create problems. State planning agencies could assist the local governments in developing model mobile home court ordinances to encourage safe, sanitary, and orderly development. Where possible, the States and localities should encourage private developers to construct new housing for the long-term new residents.

Another suggestion for meeting housing needs would be to encourage construction of duplexes or other multiple-dwelling units. The original owners might include local residents, who would sell the structures to the permanent operating personnel.

Certain Federal agencies, such as the Farmers Home Administration and the Department of Housing and Urban Development, can provide technical and, in some cases, financial assistance to private enterprises. Also, the States should consider establishing a State housing finance agency. Such an agency was recently proposed in Montana and one has been established in South Dakota. The agency could make low-interest-rate loans available to encourage construction of homes for low and moderate income families.

Water and Sewer--Water and sewer facilities will need to be expanded in order to serve the new populace. Communities may take advantage of programs and assistance offered by the Environmental Protection Agency and the Farmers Home Administration. These agencies provide loans and grants to communities to establish solid waste management and waste disposal systems. The Department of Housing and Urban Development has similar programs for communities of 10,000 or more inhabitants.

Some local public capital improvements are financed by bonds which can spread or delay the pay-back over a number of years. In North Dakota, some private and quasi-public improvements, such as industrial plants, shopping centers, and hospitals, have been financed by revenue bonds. Revenue bonds are not an obligation of the municipality nor do they require voter approval, as opposed to general obligation bonds which are also available. Sometimes the industry involved purchases the municipal bonds. These bonds are tax free, providing an additional tax advantage. Where an industry or commercial facility is financed by revenue bonds and a lease-purchase arrangement is negotiated, corporate funds are freed for operating capital.

Health Care--The health delivery systems in the coal development areas may not be adequate to serve an expanding population. Some health delivery systems serving the rural communities provide a minimum level of service. Often the residents are forced to travel to larger communities to receive adequate health services. Various State departments of health should aid these localities in making greater use of the appropriate Federal programs to increase and improve their health delivery programs.

Education--The educational system is likely to experience severe stress as a result of the rapid increase in the number of school-age children during the construction population boom. Often, educational programs and systems cannot respond with sufficient speed or scope to provide adequate facilities to serve this population, but find themselves "stuck" with complexes that are larger than those needed for the post-boom population. Temporary classrooms (mobile structures or modular structures) could be provided during the boom periods. When the boom has subsided, the school districts would have more accurate financial and enrollment information on which to base decisions regarding construction of permanent facilities. An open forum involving boards of education and the development companies would aid the planning decisions of the boards of education. This would also help the development companies maintain their work force by reducing social tensions; families moving into the area would have a better idea of what is in store for them.

Generating sufficient capital is another problem the school districts will have to overcome. Coordination of activities with the State's Attorney's General may provide solutions. A method for prepayment of taxes to school districts could alleviate the short-term crunch. School districts may also want to explore the possibility that development companies might donate, loan, or lease the necessary facilities to aid in accomodating rapid pupil growth. State offices of education should anticipate tax lag problems and, where and when necessary, provide funds to local jurisdictions so they can carry on their educational programs without overcrowding or diminishing the quality of education. Furthermore, it is recommended that the concept of federally impacted school districts be expanded to include school districts impacted by persons employed in energy-related facilities being used to meet national energy needs and goals.

Subsequent to planning and the determination of priorities, there is the additional problem of implementing these plans and the inadequacy of localities to finance the necessary community facilities to accomodate growth. Innovative financing mechanisms need to be developed to aid localities in funding these facilities.

Problems related to development, such as the construction of adequate housing, schools, sewer and water, and recreational facilities will require innovative financing programs as well as legislation. The various levels of government may exercise their regulatory powers to alleviate problems that often accompany coal development. Other areas such as law enforcement, the courts, and a multitude of other governmental programs will need full-time staff personnel. Consolidation of some community and county functions such as jails and traffic courts could benefit the areas concerned through savings in operating costs. Also, the consolidation of functions could possibly eliminate some jurisdictional overlaps.

Interagency coordination and cooperation will provide assistance for communities in most cases. This cooperation should include all groups and all levels of government if it is to effectively deal with the potential problems associated with rapid development.

Conclusion

The principal problems that must be addressed by communities facing impact from coal development are (1) establishing a sensible system for determining priorities, (2) developing a planning mechanism with appropriate personnel; and (3) providing for citizen participation in decisionmaking.

Development Regulations and Policies

Local, State, and Federal policies and regulations will determine to a great extent the where and when of rapid coal development. They form the constraints within which cost and profit decisions of the industry and individual corporations function. Development will be accelerated or restricted through the exercise of various policies and regulations. Those policies and regulations affecting land use planning, zoning, environmental standards, water appropriation, and the individual will greatly influence the nature and extent of coal development in the Northern Great Plains.

Land Use Planning

Regulation of development is essential to insure the region's orderly growth. Unplanned development (coal and associated development activities) can lead to overcrowding, unsanitary conditions, unsightly and unpleasant development, and consequential damage to neighboring activities. Land use planning and control has been applied in various ways throughout the United States. Various States and localities are, in one manner or another, examining land use planning. Recent uncertainty as to Federal legislation (H.R. 10294 and S. 268) has left the States in a precarious position. The dilemma is: Should the States react to Federal legislation and follow suit with similar legislation; or should they develop their own policies and hope they satisfy Federal guidelines?

Land use planning covers a wide spectrum of issues, problems and policy decisions. These issues cannot be resolved through simple decisions by uninformed decisionmakers. The decisions will have to be made in coordination with all levels of government and by a wide variety of interests. The development of coal lands in the West is one such land use planning issue, among many.

The United States desires to increase energy selfsufficiency by developing its natural resources. One method of achieving selfsufficiency (expanding the use of low-sulfur Western coals) is in direct conflict with desires of those who want to maintain the unspoiled environment and serenity of the West. This is not limited to conflicts between a few environmentalist groups and the United States, but includes almost every conceivable alliance against some other alliance or interest group. There is a great diversity of ownership in the lands of the Northern Great Plains.

> Ownership by the federal government, the States, the railroads and other private sectors of the economy present a wide variety of conflicting ideas of how the lands should be developed. The Northern Great Plains States are experiencing increasing difficulties in keeping a balance between maintaining a quality environment and the development of their natural resources. Products and by-products of extraction, processing and transportation of the resources in some form or another to the rest of the nation may present some real problems in terms of the depletion of the environmental quality within the region. Under these conditions which offer no return to "normalcy", the States are being thrust into a responsibility for mediating among competing uses of resources, preventing destructive conflicts between land uses and conserving non-renewable resources. [Nez and Mutter, 1973

The Western States, including the Northern Great Plains States, are in a unique position; a substantial portion of their land and a substantial portion of the mineral estate--not necessarily conterminous--are owned by the Federal Government. Decisions regarding development and use are determined by actions in Washington (Congressional as well as Executive). Of the strippable coal within the Fort Union and Powder River formations, best estimates indicate that the Federal Government owns about 55 percent of the mineral rights in Montana, 26 percent in North Dakota, and 45 percent in Wyoming. In addition, Federal leasing programs will influence to varying degrees the leasing programs of the States and the development of energy-related resources. Montana is reviewing its leasing policy, and indications are that it will increase the leasing rates considerably. Wyoming has established new leasing rates that became effective February 7, 1974. North Dakota is not presently leasing land for strip mining, as a study is being conducted to identify its coal resources. Granted, these are not specific land use decisions; however, they will affect the leasing decisions of private industry.

Land use planning will also affect development decisions on power plant and gasification sitings, recreation activities on Federal lands, and State and Indian lands, as well as on privately owned lands. Land use planning is a macro look at the entire realm of possibilities available for uses of the land. Zoning, on the other hand, is a micro approach to land use planning and control.

Zoning

Zoning and all that it implies is generally carried out at the community and county levels. It varies among States and among government subdivisions. It is primarily a response to a plan, and is the tool used to implement the plan. Zoning does not usually affect what has been done in the past--only what can be done in the future. Problems sometimes arise when the jurisdictional unit for zoning is too small. Growth and development bypass the zoned area, only to occur in the adjacent unzoned area. In this respect, development may occur outside the jurisdictional boundary of a community; yet the community must bear costs for providing services to residents from outside the community. The principal zoning regulation and policy conflicts will involve zoning for mobile home courts, commercial districts, subdivisions, and industrial tracts. Rightly or wrongly, mobile home courts carry a perceptual stigma for many people. This attitude may be based on the type of people who formally resided in trailers, or the fear of lowering the resale value of a home by having a mobile home court adjacent to the property. However, mobile homes and mobile home courts will be necessary in order to accommodate the temporary rapid influx of construction workers in the principal impact areas.

Proper zoning techniques and regulation of construction will permit the affected communities to better plan for and handle growth, thus eliminating to a considerable degree the negative aspects of rapid temporary growth.

Minerals Leasing

Leasing activities will determine future development of the Northern Great Plains coal and other mineral resources. Temporary moratoriums on leasing of Indian, State and Federal lands have delayed to some extent the immediate development of Western mineral resources.

For instance, discussions are now underway in Washington, D.C., to determine, set, and finalize national energy policies. As these policies are implemented, coal development in the Northern Great Plains will be either relatively restricted or encouraged. Further, the economics of developing alternative sources of energy will also determine the long-range effects of coal development in the region. Coal for thermal electric generation is ideal for immediate energy supply. However, as various new technologies are developed and come on line, the desirability and need for Western coal may be lessened. It is impossible at this time to forecast technological breakthrough. However, the threat of obsolesence and depletion of natural resources, especially coal in some areas, is very real.

If Montana's present policy preferences are implemented, no more energy conversion plants will be built in the State in the next few years. Future considerations may alter that decision. The Indians in some instances are taking a "go slow" approach in order to analyze all their options. North Dakota has taken a similar stance. Wyoming has taken the position that mineral development must be environmentally, economically, and socially sound, so that the quality of life can be preserved. Depending on the influence of policy preferences such as these, assumptions regarding the levels of development could change. The leasing decisions and policies implemented by the States, tribal councils, and the Federal Government will determine the development levels. No matter how great the role of the Federal, State, and tribal councils in leasing practices, the individual landowner may have an important say in what the developmental levels will be. By withholding from sale selected tracts of land, the rancher or farmer may effectively forestall or prohibit future development in certain areas. Selective withholding of land may prohibit the energy companies from securing the large coterminous tracts needed to economically carry out strip mining. Whether or not pending Federal legislation permits or prohibits the development of mineral rights on lands where surface ownership differs will also determine the level of coal development. Presently, debate in the U.S. House and Senate are addressing this problem. Representative Melcher and Senator Mansfield have introduced amendments to H.R. 11500 and S. 425 which would prohibit strip mining where there is split ownership in mineral and surface rights.

The Council of Economic Priorities has been quite critical of the manner in which the Department of the Interior leases land for resource development. For example, Interior leases land for development when the market demand for that resource is low. The price paid for that leasehold is commensurately low; therefore the profits accruing to the public remains low when the price of the resource increases by a shift in demand. Essentially, the Federal leasing policy has not operated in the public interest.

Water

The availability of water, and the ability of energy producing companies to secure the needed water, will also determine the development levels of coal. Water is essential for almost every type of activity undertaken by man. Conflicts in water usage in the Northern Great Plains may become a very serious problem. Water is abundant in some areas and less so in others. The same holds true for coal. However, simply because there is coal does not insure the availability of sufficient water supplies for energy conversion. The conflict in the Northern Great Plains is in competing uses of the water, such as agriculture versus energy development. Each activity uses large quantities of water. In the semiarid sections of the Plains States, irrigation is used to supplement low rainfall; coal development may disturb the groundwater availability in and adjacent to the areas being mined. Direct diversion of surface water will require various actions among the parties involved.

Montana and North Dakota have placed a moratorium on future large water appropriation permits until they can determine the optimum use of the water. The Yellowstone River Compact, Article X (Ten), may limit some development in Montana and northeastern Wyoming. The Supreme Court Decree of 1954 (Nebraska, Wyoming, and Colorado) insures Nebraska of a specified water flow through the North Platte River. This may limit development of coal conversion facilities along the North Platte River, which is adjacent to the southern end of the Powder River Formation and the Hanna Basin in Wyoming.

Furthermore, the reclamation of surface mined land may be impossible or limited in certain areas if sufficient quantities of water cannot be secured.

Environmental Standards

Environmental legislation at the State and national levels may restrict or impede coal development and conversion in the Northern Great Plains. The technology is available to insure the maintenance of the existing high environmental quality of the area. However, the concentration of energy conversion facilities could erode the environmental quality. Nebraska, for example, has a policy that prohibits concentration of major pollution sources within a 20-mile radius of another major source of pollution. Each State in the region has regulations and policies geared to insure the maintenance of high air quality standards, and will use these regulations to maintain that high standard. In this respect, some development may be forgone if coal conversion facilities cannot or do not satisfy these State policies.

Indemnification for Water Loss and Air Pollution

The problem of possible damage to farmers or ranchers through water loss or air pollution could be alleviated through the creation of an air and water indemnification fund. This would also entail novel methods of financing such a fund.

Under certain circumstances, ground water and surface water available for irrigation and other agricultural uses may be reduced as a consequence of large-scale industrial use. The law with regard to loss by surface water users is fairly clear, and therefore the mechanism for compensation can be reasonably developed. The law for ground water is frequently vague, and therefore the mechanism for compensation is much more difficult. In both instances, to remedy the loss or injury as a result of reduced water availability, the various States could take steps to implement a water loss indemnification fund. In this program, the affected individual or group that has been injured by loss of water may be made whole without his bearing the cost of proving his water loss as well as the cost of litigation. A simplified administrative review process conducted by the regulatory agency which has issued the mining permit, would adjudicate such matters, determine liability, and establish payments to cover damages if deemed appropriate. The financial base to support the indemnification fund could be financed through general fund appropriations, an indemnification bond covering consequential damages posted by the coal company, or allocation of a portion of the coal severence tax or coal royalty tax.

Ranchers, farmers, and communities downwind from various coal processing and utilization facilities may find that an increase in airborne particulates and chemicals adversely affect their crops, gardens, or livestock. In order to effectively resolve the potential problems that may arise from airborne particulate damage, an air quality indemnification fund could be established along lines similar to the water loss indemnification fund proposed above. Also, more air monitoring stations could be established at various intervals downwind from large point source polluters prior to the power plants' opening, so that accurate base data could be obtained. This information would be helpful both for enforcement and possible litigation.

Conclusion

Regulatory powers at all levels of government can preclude, forstall, or encourage coal development. These include Federal, State, and local laws concerning leasing of coal lands, air quality control, land use control, and water appropriation. Through the exercise of these regulations and policies, the magnitude and velocity of coal development will be determined, as well as through the ability of people and government to adequately provide for the social services and functions that will be needed in the region.

Further Research Needs

1. Legislation to establish a mortgage finance program to help developers and communities provide adequate housing during periods of rapid buildup and operation.
2. Legislation for Federal assistance programs to provide adequate health care delivery systems in impacted communities.

3. Land use planning and zoning controls are needed to effectively channel the location of growth in rapidly developing areas.

4. Legislation and implementation mechanisms needed to resolve interstate and cross-county planning needs and problems.

5. Legislation for some type of legal recourse to alleviate adverse downwind and downstream impacts associated with coal development, e.g. indemnification funds.

VI. EFFECTS ON NON-GOVERNMENTAL SERVICES

Several historical characteristics of the impact area have, and will, influence the delivery of non-governmental services. The Northern Great Plains is a vast and sparsely populated portion of the country. Over the years, the traditions of individualism have become very pronounced; among the characteristics most admired by residents of the area are independence and self-reliance. These attitudes have probably been an important factor in determining the level of demand for all types of services, a level which is quite low compared to more urbanized parts of the country. Consequently, the level of service delivery is also very low.

The impact of coal development on non-governmental services is extremely difficult to assess. This is due in large part to the fact that the phrase "non-governmental services" encompasses such a wide range of services from the banks to the Red Cross to the local pub. Additionally, the variety of available services varies widely from place to place.

The following information is based on three studies done under the auspices of the Office of Economic Opportunity: "The Non-Governmental Services Impact Study," prepared by Sandy McCaw and Robert Turner (1974); a second study of the same title, prepared by the Wyoming Office of State--Federal Relations; and "Present and Projected Social Impact Resulting from Coal Development in Seventeen Eastern Montana Counties," by Tom Meissmer.

Preceding page blank

Adequacy of Existing Services

Typically, the organizations providing non-governmental services in the NGPRP area are small, with nonprofit groups almost wholly dependent on volunteer workers for direction and administration. The adequacy of existing services is difficult to assess. In response to questioning, a vast majority of organizations stated they believe they are now meeting current demands for service delivery in their area. However, there are at least two other considerations: (1) How do the people of the area feel about the adequacy of the existing services? (2) How adequate are these services in terms of standards, such as national or State averages? Little work has been done in this area of inquiry, but indications are that, for the most part, the non-governmental sector exhibits several deficiencies in many parts of the NGPRP area. It is, however, important to note that the majority of the people in the rural communities in the area do not place as great a demand on non-governmental services as do those residing in the larger cities.

Existing Need for Services

Fewer than half of the organizations in the impact area see a need for more non-governmental services in their communities at the present time. Most respondents that do see a need for more services mentioned improved medical services as the most urgent need. Other frequently mentioned service areas were housing, consumer outlets, and youth services. In many instances, most services are available to rural residents only in the larger towns.

Because of the distances involved, some persons must travel many miles to secure services that people in larger communities take for granted.

In areas that have already begun to feel the impacts of development, the housing shortage has received the most widespread concern on the part of community residents. This shortage is not entirely coal related. Populations in these areas have been static or declining over the past decades; consequently, there has been little incentive to replace obsolete housing units. The high cost of building materials may well be another factor. Whatever the reasons for the shortage, it must be realized that it exists, and any minor influx of people will make the problem worse. Housing is a roadblock to securing the other services indicated as desirable by the residents. Service people will not move into a community unless they can find a decent place to live. In addition, the shortage of housing will undoubtedly cause a substantial rise in housing costs, and the generally low wages in the service sector may not be sufficient to cover this expense.

As it stands, the picture is bleak. Many persons interviewed point out the housing need, but are not planning to do anything locally. They have adopted a "wait and see" attitude.

Health care is, and long has been, a serious problem. Probably the greatest concern is the shortage of doctors. For example, in 1970 the ratio of medical doctors to patients in eastern Montana was 1:1,962. This compares with a national average of 1:627 and a ratio in Montana as a whole of 1:910. The vastness of the Northern Great Plains Region places many people great distances from medical care. The people of the contacted communities seemed to realize that there is a shortage of doctors, but also seemed to peacefully accept this fact.

Hospital facilities in the communities visited seem adequate for present needs. On the whole, the hospitals and clinics contacted feel they can successfully handle an influx of population. However, they have not really considered planning for the influx, and it is not clear just how much growth they will be able to accommodate.

In the areas of both housing and health, the burden of the shortages will likely be most heavily borne by the elderly. Elderly people require more extensive medical treatment than the rest of the population. It is logical, then, to assume that the aged will be the first to feel the discrepancies of a strained medical facility.

It is not yet clear how nursing and retirement homes will be affected. The homes contacted feel that an influx of people would not affect their organization in any noticeable way. However, if rising property values and rents become too much of a burden for older people on fixed income, many of them may wish to relocate in such facilities. At present, the number of nursing home beds per thousand population is far below the national average. This is not the only consideration; the types and locations of beds are perhaps more important.

The elderly and others on fixed incomes will bear a disproportionate share of the burden not only of housing but also of rising prices for all services. This is particularly true for the transition period, as the service sector attempts to expand to accommodate growth.

Ability of Organizations to Expand

In a rapidly expanding growth area, "front-end" resources are commonly in short supply. It was anticipated that a survey of non-governmental services would reflect considerable concern over the impact of rapid population growth. However, the majority of organizations now providing services in the NGPRP area are not significantly disturbed about the pending growth. They do not anticipate significant problems in raising the money or in acquiring the resources needed to continue to meet the demand for services. Except for banks and other financial institutions, most of the organizations do not participate in community planning forums and do not have formal planning procedures that would enable them to forecast and anticipate the impact of different kinds of growth and development on their clients or members. Less than half of the nonprofit organizations anticipate increasing their services in the near future. In contrast, the vast majority of commercial and professional service organizations are planning to expand in the immediate future.

In general, the studies conducted to date reflect an optimistic view of pending coal-related development in the NGPRP area by both nonprofit and profit oriented non-governmental service organizations. Indications are that there will be very little formal planning done by either voluntary or commercial groups to better direct or anticipate the growth that will occur in the area. The majority of respondents seem to feel that the laws of supply and demand will prevail in the delivery of non-governmental services.

The extent to which the service sector can, in reality, expand to meet any type of rapid increase in demand is questionable. Banks and financial institutions are probably the most prepared. However, their planning comes for the most part from head offices in larger cities outside the local area. Local bankers did not indicate any concern about lack of financial resources or credit to finance expansion of local economies, but this is a very real possibility.

Other services appear to vary widely in their preparedness to handle a rapid growth. However, this question was not really addressed in sufficient detail to draw any solid conclusions. In addition, it is impossible to assess from existing information the extent to which the organizations surveyed understand the implications of the impending growth. Variations in definitions of terms and in information regarding local growth projections may limit the comparability of some of the responses. Any interpretation of the results will have to be measured against the possibility that respondents have assigned different meanings to terms such as "growth," "impact," "service," "need," "demand," and "resource."

Demand for New Services

There is also the question of demand. Demands for services in this predominantly rural area have not been very heavy to date, and it is likely that service organizations expect this trend to continue. However, there is considerable evidence to suggest that with a significant influx of new residents, the demand for services will increase out of proportion to the number of new residents. Demands among the long-term residents of the area have been substantially lower than those of newcomers. In addition, many services once provided on an informal basis by members of the community will undoubtedly have to be provided more formally as the population expands.

Very little is known about the tastes and preferences of the expected inmigrants. There is some basis to suspect that newcomers will demand different as well as more services, since many of them will come from areas that are larger and more cosmopolitan and provide more services than the Great Plains communities. This is certainly an issue of great importance. Unfortunately, it is also one which has not been adequately addressed. No one knows who these new people will be and what they will be like.

Conclusion

In short, it is not clear just what the impacts of coal development on non-governmental services will be, but it is probably safe to say that there will be some severe strains on the system. How to alleviate these strains is likely to become an important issue. Should the government step in to help plan? Or, should it provide or help provide the actual services, such as housing and health care? What about the short-term impact of the construction workers? Who will provide for them? In the long run, answers to these and other questions will determine, in part, how well the communities in the NGPRP area adjust to coal development.

Further Research Needs

The work accomplished to date on non-governmental services has been very limited in scope. Additional research is needed in several areas before sound decisionmaking can be assured. The following are deemed to be among the most important of these:

1. The geographic pattern of service availability should be studied and documented.
2. People who actually receive the services should be surveyed to determine whether their opinion of the adequacy of services coincides with opinions expressed in the survey of service providers.
3. More information is needed on the socio-demographic characteristics of the inmigrant populations. As mentioned above, it is likely that these people will have service demands significantly different from those of existing resident populations.
4. Other areas which have experienced large, rapid population influxes (such as the ABM missile sites) should be studied to determine whether any parallels or conclusions can be drawn.
5. Some attention should be given to the question of what, if anything, governments should do to aid impacted communities in relieving strains on non-governmental service delivery systems.

OVERVIEW

With the advent of coal development as an issue, the Northern Great Plains area has suddenly acquired a new importance. America needs energy, and this region has the resources to supply it. Ultimately, our society must face the questions of economic, social, and environmental trade-offs associated with coal development. People of the Northern Great Plains have some partioular concerns. A vigorous and healthy economic environment is important to their welfare; so, too, are the characteristics of the area that originally made it a desirable place in which to live. These people will be vitally affected by decisions about how, for whom, and at what external cost the area's natural resources are to be utilized.

Coal development is an essentially "human" activity in all respects; and whatever its results, changes are really only impacts insofar as they affect people. This is not to say that such development will have no effect on fragile ecologic systems. However, there are two points of note. If there were no people, there would be no coal development, and hence no impact. Furthermore, if there were no people to observe the effects of stirp mining and attendant industrialization, there would be no one to care. "Impacts" imply that someone does care. The smoke from the electrical generating plant is not important; the effect of that smoke on people and their lives and perceptions _is_ important.

The people of the Great Plains region no doubt recognize the apparent economic opportunities of coal development. They are, however, less sure of their ability to determine acceptable rates of resource development. Additionally, it is becoming apparent that many feel they have no decisionmaking power. These people fear that the region is small and unimportant, compared to the larger forces of industry and national government. They fear that if these forces wish to extract and use the coal, they can and will to whatever extent they desire, regardless of the feelings of the inhabitants of the area. This is an extremely sensitive issue; people want to control what happens to them. There can be no denying that with rapid energy resources development in the Northern Great Plains, more of the decisions that affect the local people will be made outside the region, by both governments and industry, by people who need not be responsive to local interests or values.

Coal development presents a regional problem insofar as it will affect localities over a wide geographic area. Nonetheless, it is the locality--the local people and institutions--which will have to face this problem and resolve the issues. It is doubtful that many of the localities in the Great Plains region are really prepared to do this.

Americans probably do not know how to deal confidently with a development of such magnitude. As a society , we have developed a deep-rooted belief in the sanctity of growth. At the same time, we have developed a great deal of faith in planning. We are now at a point where we need to ask ourselves some fundamental questions: Do we really want or need growth? If so, what type? Should we plan? For what? For whom? By whom? According to whose standards?

Or, can we plan? The validity of the answers to these and other questions will determine, to a large degree, the success with which we answer the challenges.

Finally, it must be remembered that uncertainty is a fact of life when dealing with people. The human organism is amazingly complex. Any social analysis must be done with this in mind. Such analysis seeks to add understanding and knowledge; but as long as we deal with such a complex organism as man, we will never know everything.

REFERENCES

I. Work Group Supporting Documents; Available in NGPRP Public Repositories

Bickel, David, and Clark Markel. "Western North Dakota High School Senior Profiles," Cooperative Education Program and Experimental College, Minot State College, Minot, N. Dak. April 1974.

Abstract. A questionnaire designed to measure student attitudes toward coal development and post-graduation plans was administered to 1,500 randomly selected students in 28 counties in western North Dakota. Students ranged in age from 16 to 19 and both sexes were almost equally represented. Most students were long-term residents of the State and their present school district, with residency times being slightly longer for students from counties with relatively high population. Forty-four percent of the students were from families that receive some income from agriculture. Of these 70 percent own, operate, and live on their farm or ranch. Most students, 68 percent, plan to seek some form of post-secondary education, as opposed to the 6 percent planning to enter agriculture directly. Five of the students plan to enter the military service and an additional 5 percent some other occupation. Students indicated a preference for college programs as opposed to vocational or technical training, although 80 percent indicated that 2 years or less is the ideal time to spend in post-secondary training. Less than 5 percent of the students or their families were directly associated with energy industries. When plotted on a State map, similar attitudinal configurations characterize attitudes toward coal development, immigration into the region, and restrictions on national use of State resources. More negative attitudes toward coal development occur in the Little Missouri Valley area of southwestern North Dakota, than in areas to the north and east. Students from southwestern North Dakota were also more inclined to question the value of immigration related to energy development and the development of resources for utilization outside the State.

Bureau of Indian Affairs in cooperation with the Tribes of the Northern Plains. "Indians in the Northern Great Plains; anticipated Socio-Economic Impacts of Coal Development," Billings, Mont. April 1974.

Abstract. This paper (1) describes population and resource base of Indian tribes and people in Northern Great Plains, (2) projects socio-economic impact of coal development at two probable levels of coal development on Crow Indian reservation in Montana, and (3) summarizes needed action to mitigate possible disbenefits.

Preceding page blank

Bureau of Reclamation, Billings, Montana and the Center for Interdisciplinary Studies, Mont. State Univ., Bozeman, Mont. "The Anticipated Effects of Major Coal Development on Public Services, Costs and Revenues in Six Selected Counties." April 1974.

Abstract. The section of the report dealing with service needs, providers, and specific recommendations regarding service needs was the responsibility of Don Patterson in consultation with Anne S. Williams, both of the Center for Interdisciplinary Studies at Montana State University. The sections dealing with population, cost for governmental physical infrastructure and services, government revenues, and disparities in time and place of revenue and service were the responsibility of Edward L. Leland with the assistance of William E. Crosby and Derwood C. Mercer, Bureau of Reclamation.

The report deals with the effects of three levels of coal development on government service requirements, providers, and delivery systems and their costs. Estimates of revenues and availability to localities, States, and Federal Government were made. Disparities in time and place of revenue and service are discussed.

Carnes, Sam, with H. Paul Friesema. "Urbanization and the Northern Great Plains," Center for Urban Affairs, Northwestern Univ., Evanston, Ill. April 1974.

Abstract. This study, based upon a review of the relevant academic literature, attempts to identify the major impacts of industrialization and urbanization upon the social economic, cultural and political systems of small rural towns in the Northern Great Plains. It was found that the specialization and differentiation of interests, associations, and dependencies that accompany industrialization and urbanization have major impacts upon the individual, the family, inter-group relations, religion and the church, the community press, crime and social disorder, local governments and their leaders, and the economy. This report makes only comparative, "more than/less than" kinds of statements about the various impacts, and perhaps raises more questions than it answers.

Dalsted, Norman L., F. Larry Leistritz, Thor A. Hertsgaard. "Energy Resources Development in the Northern Great Plains: A Summary of Economic Impacts," Dept. of Agr. Econ., N. Dak. State Univ., Fargo, N. Dak. April 1974.

Abstract. The report summarizes the economic impacts of three energy development alternatives (the NGPRP Scenarios) for the Northern Great Plains. Economic impacts are summarized for the principal impact areas of North Dakota, Montana, Wyoming and Nebraska. The effects of development on employment, population and the economic wellbeing of area residents are summarized. The impact of energy development on agriculture also is discussed.

Dalsted, Norman L., and others. "Economic Impact of Alternative Energy Development Patterns in North Dakota," Dept. of Agr. Econ., N. Dak. State Univ., Fargo, N. Dak. April 1974.

Abstract. The report summarizes the economic impacts associated with the three development scenarios, provided by the National Energy Consideration Work Group, NGPRP, as related to North Dakota. The economic effects of development alternatives are analyzed with respect to changes in gross business volume, employment, population, and personal income.

Farber, John P. and Newton, Charles G. "Anticipated Energy Resources Development Impact on High School Youth in Converse County, Wyoming," Office of State Federal Relations, State of Wyo. April 1974.

Abstract. This study of 473 students in the high schools of the towns Glenrock and Douglas attempts to identify how youth would view the effects of coal development impact on their lives related to the following areas: (1) leisure time; (2) jobs, career planning and education; (3) authority; and (4) community activities. It was found that the students generally predicted changes in their life styles consistent with known transpositions in "boom-town" situations. This study shows not only current resources available to youth; it also identifies contemporary youth problems as well as probably future resource needs and problems subsequent to impact.

French, Cecil L. "Attitudes of Johnson County, Wyoming, Residents toward Selected Aspects of Their Environment," Lakehead Univ., Thunder Bay, Ont. Can. April 1974.

Abstract. A probability sample of 100 residents of Johnson County, Wyoming were questioned regarding their attutide toward their natural environment and its possible utilization. The important findings were:

(1) Almost all, regardless of occupational category, were preservationist minded.

(2) In order of developmental preference, tourism was first, mining second, and logging third.

(3) Ranchers were slightly more "developmental" minded than persons in other occupational categories.

This study seems to refute some of the assertions of major theorists in the area of environmental and wildernism studies in that upper white-collar persons do not predominate in displaying greater "preservationist" ideology. The implications for decisionmaking are noted.

Graham, Robert. "Economic Profiles of the Northern Great Plains," Regional Economics Division, Bureau of Economic Analysis, U.S. Dept. of Comm., Wash., D.C. October 1973.

Abstract. The economic profiles show for the Northern Great Plains and for each of its seven subregions a detailed economic picture covering selected years from 1950 to 2000. Included are population, employment, per capita income and total income, with the latter shown separately for each of 34 industries. A brief description is included for each area.

Institute for Social Science Research, Univ. of Mont., Missoula, Mont. "A Comparative Case Study of the Impact of Coal Development on the Way of Life of People in the Coal Areas of Eastern Montana and Northeastern Wyoming," April 1974.

Abstract. The six-member research team was headed by Dr. Raymond L. Gold, Director of the Institute. The report is an ethnographic study of the views, thoughts, feelings, and reactions of residents living in two selected coal areas of the Northern Great Plains, focusing on the towns of Colstrip and Forsyth in Montana and on Gillette in Wyoming and their surrounding vicinities. Persons interviewed included ranchers and various groups of established town residents as well as newcomers. The report seeks to present how different groups of residents in the study area are reacting to coal development and what they perceive to be the differential impact of coal development on their lives.

Lemmerman, Kathe L. "Columbus/Noonan Study," Experimental College, Minot State College, Minot, N. Dak. April 1974.

Abstract. This study addresses itself to the question, "What happens to a coal town when the mines and/or power plants close?" Coal development and decline have played a significant role in the North Dakota communities of Columbus and Noonan. The area has experienced underground and strip mining, small independent and large-scale mine operations, mining before and after the passage of reclamation laws, coal-generated power plant development, lignite aggregate plant development, and mine and power plant closings. There has been little conflict between agriculture and mining; the two have existed in the area since its settlement. The population profiles of the two communities differ markedly from that of the region and the State. The coal industry in the area helped offset the population decline caused by people leaving the farm from 1920 to 1960, and the coal industry and power plant closing in the 1960's in all probability caused the extensive decline after 1960. Various segments of the communities have been affected by the scarcity of human resources. The market and trade sectors of the two towns have experienced extensive decline. Governmental and nongovernment services have been adversely affected by coal mining and population decline. There is considerable resentment toward State and Federal Government; the residents feel government is not responsive to the needs of small communities. However, even though the coal industry has declined in the area, the residents have retained quite positive, realistic attitudes toward coal development in the State and the region.

Leholm, Arlen, F. Larry Leistritz, Thor Hertsgaard. "Local Impacts of Energy Resources Development in the Northern Great Plains," Dept. of Agr. Econ., N. Dak. State Univ., Fargo, N. Dak. April 1974.

Abstract. The report summarizes progress to April 15, 1974, and presents a work activity schedule for further study efforts. The report is preliminary and does not reflect any results. The material is presented in four sections: Section I is a physical description of the study area. Section II describes the socio-economic characteristics of the study area (Mercer, McLean, Dunn, and Oliver counties of North Dakota). Section III relates the NGPRP development scenarios to the study area. Section IV is a time scheduled workplan by major study objectives.

Matson, Roger A., and Jeannette B. Studer. "Energy Resources Development in Wyoming's Powder River Basin: An Assessment of Potential Social and Economic Impacts," Water Resources Research Institute, Univ. of Wyo., Laramie, Wyo. April 1974.

Abstract. This report contains population and employment projections for the Powder River Basin of Wyoming based on the specifications of scenarios developed by the NGPRP National Energy Considerations Work Group. Projections were made for the entire Powder River Basin and then disaggregated to obtain projections for the eight counties discussed in this report, such as income levels, income distribution, migration levels, skill requirements and general areas where problems may develop due to increased energy development.

McCaw, Sandy. "The Governmental Services Impact Study of Overlapping and Conflicting Jurisdictions in the NGPRP Impact Area," Office of Economic Opportunity, Region VIII, Denver, Colo. April 1974.

Abstract. This report outlines the overlapping and conflicting jurisdictions that exist in the NGPRP impact area. Information was obtained from the Denver Office of Economic Opportunity's participation with the Mountain Plains Federal Regional Council in its effort to improve the administration and management of Federal assistance to the local and State organizations in Region VIII.

McCaw, Sandy and Robert Turner. "The Non-Governmental Services Impact Study," Office of Economic Opportunity, Region VIII, Denver, Colo. April 1974.

Abstract. This report summarizes the findings and interpretations of the non-governmental services impact survey conducted by the Regional Office of Economic Opportunity in Denver, Colorado. The survey sought responses from more than 1,250 profit and non-profit organizations and agencies in the 56 county impact areas of Montana, Wyoming and North Dakota.

Most organizations contacted by the surveyors believe that they have sufficient income and other resources to provide the services for which there is a demand. Most organizations have room for modest growth within their present physical plants, and a vast majority of organizations believe that they are now meeting the current demands of services they offer in their area. Some organizations are experiencing difficulties in recruiting qualified staff, but no organizations report cutting back on services because of lack of either resources or staff. Most organizations indicated that they had not "formally" planned for expansion of services; however, a vast majority of organizations surveyed indicated that they could expand their services in proportion to the growth of the population, and a significant majority of these organizations are now in the process of expanding services. Slightly less than half the respondents found that there was an increased need for non-governmental services in the NGPRP area.

Meissner, Tom. "Present and Projected Social Impact Resulting from Coal Development in Seventeen Eastern Montana Counties," Action for Eastern Montana, Glendive, Mont. April 1974.

Abstract. This supporting document centers around its first two recommendations listed on pages 25 and 26. These recommendations state that (1) communities or counties should establish a "Coal Awareness Committee" in order to facilitate public awareness and then to plan for possible impact; (2) energy companies should be required to prepare a Social and Economic Impact Statement in order to allow communities time to prepare for the social impacts of industrial expansion.

The support document is developed around the local level. A discussion of psychological effects of crowding is considered. The importance of coordination and cooperation is stressed.

Polzin, Paul E. "Projections of Economic Development Associated with Coal-Related Activity in Montana," Bureau of Business and Economic Research, Univ. of Mont., Missoula, Mont. Jan. 1974.

Abstract. This study begins with background data concerning population, employment, and income for current residents in a seven-county area in southeastern Montana. Indians, the major racial minority, are also examined. The three scenarios prepared by NGPRP were then used to project the economic changes which will take place resulting from coal-related employment. Specific projections for population, employment (direct and indirect), income, and migration were prepared for 1980, 1985, and 2000, under each scenario. Given these projections, several issues (such as economic stability and income distribution) are discussed. There is also a short section describing methodology.

South Dakota Planning Bureau. "Some Impacts on South Dakota of Coal-Related Development in the Northern Great Plains," State Planning Bureau, Pierre, S. Dak. April 1974.

Abstract. This brief paper identifies concerns to the State of South Dakota of both potential "primary" impacts from strip mining in Corson, Dewey, Harding and Perkins Counties, and more importantly the "secondary" or second-round impacts on South Dakota which may result from coal related development occurring in Wyoming, North Dakota, and Montana.

Particularly, it addresses potential effects surrounding siting of energy conversion facilities, downwind atmospheric effects of neighboring facilities on the Black Hills area, downstream effects on both water quality and water quantity from adjoining States, effects on ground water and ground water recharge areas in South Dakota resulting from mining Madison Formation ground water, effects of increased recreation pressure on the Black Hills, regional economic effects on the Rapid City trade area, and potential effects from the routing of transmission lines, gas pipelines, slurry pipelines or unit trains across South Dakota. While some regional baseline data are presented, it was not possible to address these secondary impacts analytically at this time as data on primary impacts on North Dakota, Wyoming and Montana are only presently becoming available.

Twomey, James P., and Peter G. Kuh. "Governmental Programs, Resources and Regulatory Powers Available to Assist Localities During Coal Development," U.S. Dept. of Housing and Urban Development, Region VIII, Denver, Colo. April 1974.

Abstract. This report was prepared under Contract (H-3678) to the U.S. Department of Housing and Urban Development's Region VIII office. For purposes of this study the authors concentrated on seven counties in Montana, eight in Wyoming, ten in North Dakota, eight in South Dakota and three in Nebraska.

Based on local visits, interviews, and available literature, the authors delineated two types of people in the coal development areas and programs to assist them. These people are: (1) long-time residents of the area, and (2) newcomers employed during the construction phase or permanently employed in coal development activities. The report breaks out 17 problems related to the first group, and 12 for the second. For each problem, the situation is described, one or more recommendations listed and a rough estimate made of costs and revenues related to the recommendations.

White, Warren. "Impacts of Northern Great Plains Coal Related Development on Nebraska," State Office of Planning and Programming, Lincoln, Nebr. April 1974.

Abstract. The report summarizes the impacts of thermal electric generating developments in a three county area in west central Nebraska. The report is preliminary and does not reflect any results. Material is presented in four sections:

Section 1. Historic base line data.

Section 2. Describes impacts associated with Scenario 1 impact levels.

Section 3. Estimates the impacts of Scenarios 2 and 3 development levels.

Section 4. A more recent appraisal of accelerated electrical generated developments based upon industry time tables and development levels.

II. Other References

Bailey, Robert, Coordinator, Northern Cheyenne Research Project, correspondence to Frank H. Osterhoudt. April 1974.

Bowes, John, and Keith R. Stamm. "Communication during Rapid Development of Energy Resources: A coorientation Analysis." Paper presented to the 1974 meeting of the International Communication Association. Grand Forks: Univ. of N. Dak., Communication Research Center. April 1974.

Callahan, John C., and Jacqueline G. Callahan. "Effects of Strip Mining and Technological Change on Communities and Natural Resources in Indiana's Coal Mining Region." Research Bull. No. 871. Lafayette, Ind.: Purdue Univ., Agr. Exp. Sta. Jan. 1971.

Council on Economic Priorities. "Leased and Lost: A Study of Public and Indian Coal Leasing in the West," Economic Priorities Report, Vol, 5, No. 2. 1974.

Bureau of Indian Affairs. "Crow Ceded Area Coal Lease Westmoreland Resources Mining Proposal." Billings, Mont., Planning Support Group. (Final Environmental Impact Statement.) Jan. 1974.

Mineral Resources Work Group, NGPRP, 1974.

National Energy Considerations Work Group, NGPRP, 1974.

Nellis, Lee. "What Does Energy Development Mean for Wyoming? A Community Study at Hanna, Wyoming." Laramie: Univ. of Wyo., Office of Special Projects.

Nez, Georga, and Douglas L. Mutter. "State Land Use Legislation Reconsidered." Regional Planning Council, Federation of Rocky Mountain States, Sept. 1973.

Statement from the Northern Cheyenne Landowners Association, Lame Deer, Mont., Presented at hearings held by U.S. Senator from Mont., Lee Metcalf, in Billings, Mont. April 1974.

Surface Resources Work Group, NGPRP, 1974.

Toffler, Alvin. "Future Shock." New York: Bantam Books. 1970.

U.S. Department of Commerce, "Statistical Abstract of the United States." 1972.

U.S. Department of Health, Education, and Welfare Public Health Service, "Health Resources Statistics. Health Manpower and Health Facilities, 1969." Gov. Print. Off., Wash., D.C.

Discussion Draft
NGPRP - 6/74

APPENDIX

I. Listing of Study Area Counties, by States

All counties--Socio-Economic and Cultural Aspects Work Group Study area.

Designated**--Case study counties, Bureau of Reclamation (1974); analysis of government revenues and services.

Designated* or **--Areas called Principal Impact Areas or Impact Areas

Montana

**1. Big Horn
2. Carter
*3. Custer
4. Daniels
5. Dawson
6. Fallon
7. Garfield
8. Golden Valley
9. McCone
*10. Musselshell
*11. Powder River
12. Prairie
13. Richland
14. Roosevelt
**15. Rosebud
16. Sheridan
*17. Treasure
18. Valley
19. Wibaux
20. Yellowstone

Nebraska

1. Antelope
2. Banner
3. Blaine
4. Box Butte
5. Boyd
6. Brown
7. Buffalo
8. Cass
9. Cherry
10. Cheyenne
11. Colfax
12. Cuming
13. Custer
14. Dakota
15. Dawes
*16. Dawson
17. Deuel
18. Dodge
19. Douglas
20. Garden
21. Grant
22. Hall
23. Hamilton
24. Holt
25. Hooker
*26. Keith
27. Keya Paha
28. Kimball
29. Knox
30. Lancaster
*31. Lincoln
32. Madison
33. Merrick
34. Morrill
35. Perkins
36. Pierce
37. Platte
38. Rock
39. Sarpy
40. Saunders
41. Scotts Bluff
42. Seward
43. Sheridan
44. Sherman
45. Siox
46. Stanton
47. Thomas
48. Thurston
49. Washington
50. Wayne
51. York

North Dakota

*1. Adams
*2. Billings
3. Bottineau
*4. Bowman
5. Burke
*6. Burleigh
7. Divide
*8. Dunn
*9. Emmons
*10. Golden Valley
*11. Grant
*12. Hettinger
*13. Kidder
14. McHenry
15. McKenzie
*16. McLean
**17. Mercer
*18. Morton
19. Mountrail
**20. Oliver
21. Pierce
22. Renville
*23. Sheridan
*24. Sioux
*25. Slope
*26. Stark
27. Ward
28. Williams

South Dakota

1. Bennett
2. Butte
3. Corson
4. Custer
5. Dewey
6. Fall River
7. Harding
8. Jackson
9. Lawrence
10. Meade
11. Pennington
12. Perkins
13. Shannon
14. Washabaugh
15. Ziebach

Wyoming

**1. Campbell
*2. Converse
*3. Crook
*4. Johnson
*5. Natrona
*6. Niobrara
**7. Sheridan
*8. Weston

II. Minority Reports

The following are exact copies of minority reports as they were submitted. All organizations associated with Work Group F between April 1973 and June 1974 were contacted and given the opportunity to submit minority reports or comments relating to this draft of the work group report. The only criteria for inclusion of a minority report below was that it must have been submitted by an organization.

1. Northern Cheyenne Research Project, June 11, 1974
2. Institute for Social Science Research, July 9, 1974

Northern Cheyenne Research Project
Lame Deer, Montana 59043
Phone (406) 477-6424

June 11, 1974

Re: Socio-Economic and Cultural Aspects of Potential Coal Development in
the Northern Great Plains - Report of Work Group F - May 1974
Northern Great Plains Resource Program

To Whom it may Concern:

Persons using this report or any previous or subsequent drafts and reports are highly cautioned to withhold judgement upon the Northern Cheyenne Nation regarding its motives, intellect, unity, desires and potential for growth in knowledge and ability to compete with vested interests in respect to coal development whether in litigation, land use planning, financial matters and most important issues of principle and morality which affect the health and well-being of Cheyenne people and fellow United States Citizens.

The fear is here expressed that this report and others will fall into the hands of people who in their consuming haste to turn the dollar whether by speculative holdings, environmental comment or wasteful exploitation because of increased stockholder earnings pressure, will employ these incomplete, inconclusive, incoherent facts and figures assumptives and generalizations in justification for overruling the Northern Cheyenne Nation due to the apathetic manner in which we are lumped with other Indian and non-Indian entities in this and other reports of the Northern Great Plains Resource Project.

The last offering of this reviewer dwelled briefly on the lack of comparative information on deposits, locations, evaluation, land base and plant and mine siting activity and projections. No significant amount of coherent information has been added to clarify these points.

This reviewer was hard pressed to obtain a copy of the Mineral Work Group Study Report in order to further verify this glaring point of departure from reality. When a copy was obtained it did not contain maps to which the text referred. These maps would point up the urgent need of more comprehensive work on the Northern Cheyenne Reservation far above the comments utilized which concerned the Crow Nation only but alluded to all tribes supposedly involved.

Another area which was neglected to an alarming degree was in regard to the Epidemology that Industrial pollution engenders. E.G. two interns and one paramedic handled an outpatient case load for the Northern Cheyenne of 19,000 during F Y 72.

This is one indicator towards the general health and longevity pattern which is approximately one-half of the national average.

Add air and water pollution to this not only from industry but from the influx population without significantly upgrading Indian health factors and you could have an outbreak which would decimate our population much akin to but more rapidly than the problems which beset Japan with the advent of heavy industrialization, due to the pollution dispersion factors inherent to landlocked areas.

Currently our forest is the largest producer of income and employment affecting the most people. According to a report for the U. S. Environmental Protection Agency in April of 1971 by the Air Pollution Control Offince Research triangle Park, North Carolina Publication APTD - 0656 Section 1, page 7 paragraph 4, "Since many of the symptoms exhibited by the affected trees were characteristic of sulpher dioxide fumigations and since damage was seemingly greater at locations nearer the Mt. Storm Power Station, it seemed logical to conclude that the station caused at least part of the damage." Can we expect this to happen on the Northern Cheyenne Reservation? Can this type of research be applied to us?

To conclude in historical perspective, is this the same type of report that was sent back to Washington, D.C. by General George Armstong Custer concerning the Gold in the Black Hills which caused the Cheyenne people such greif one hundred years ago?

Bill Parker

Bill Parker
Northern Cheyenne Research
Lame Deer, Mont.

7/9/74

Minority Report on a Comparative Case Study: An Empirical Approach

Prepared by

Institute for Social Science Research
University of Montana
Missoula, Montana

The following is a summary of the views, thoughts, feelings, and reactions of people living in the coal areas of eastern Montana and northeastern Wyoming regarding the impact which coal development is having on these residents' way of life. The ethnographic method used in this research does not seek to evaluate why such views of and reactions to development are held nor to verify that reported difficulties and situations have statistical substantiation; rather, it is concerned with verifying that what area informants report they believe or feel is consistent with what other locals generally regard as social fact. The following paragraphs summarize the issues involved from the points of view of all known groups of residents in the study area.

This summary is based upon three hundred intensive interviews with carefully selected informants from Colstrip and Forsyth, Montana, including the Decker-Birney-Ashland area; from Gillette, Wyoming; and, to a much smaller extent, from Stanton, North Dakota. Interviews were conducted from October 1973 through May 1974 using a sociological sampling approach, which enlists the help of informants in identifying and locating persons locally thought to be good representatives of various groups and points of view of interest to the research. The research focused upon the views and reactions of both landowners and townspeople in the study communities and surrounding vicinities. The latter informants represent a variety of occupations and professions, including government officials, merchants, store employees, land brokers, financiers, health professionals, welfare workers, students, educators, laborers, engineers, housewives, clergymen, tribal representatives, law enforcement personnel, senior citizens, newsmen, and lawyers. Aside from the schools, however, the biggest social impact to date was found to concern ranchers.

Changes in the way of life of residents in the coal areas of eastern Montana are already taking place. These changes include shifts in the selection of friends, strains in communicating with friends and neighbors of longstanding, the making of social class alignments previously considered unimportant, a shift in the established power structure from the ranchers to the new mining industrialists, the need to live with constant and increased uncertainties for which planning is virtually impossible, a keen interest on the part of some merchants and businessmen in immediate monetary gain, the need to accommodate to the invasion and requirements of newcomers who subscribe to foreign life-styles and value systems, and loss of a sense of community. The same pressures of rapid growth are also being felt in Gillette, but its background and orientation are affording this city the opportunity to cope with these exigencies with less strain. At present, coal development appears to be having much less effect on the residents' way of life here than it is in the two Montana towns, primarily because Gillette is already somewhat industrialized from relatively recent oil activity.

Gillette lacks the sense of community which until recently has always been good in Colstrip and Forsyth.[1] Now, however, the latters' sense of community is definitely breaking down, especially in Colstrip where the proportion of newcomers to established residents is greatest. The sudden influx of newcomers throughout the area is affecting every quarter of established town life. Law enforcement, health care services, the churches, and especially the schools are feeling the pressures of increased population. Locals in all three towns are fearful of rising taxes to pay for the expanding and immediate social needs created by development.[2] Residents are also experiencing that friends and neighbors need each other less and less as the arrival of various new goods and services is making people less dependent on their neighbors and on being neighborly. It seems evident that coal development will severely threaten the viability of the ranching culture wherever mining (or related energy development activities) occurs because of the strains it creates and the tactics it employs.

---

[1] Gillette's sense of community changed with the influx of oil people. Also, tending to have bigger, more isolated ranches and thus to be more self-sufficient, Wyoming ranchers have over the years been less given to neighboring and to developing interdependencies of the type seen in and among family owned and operated ranches of Montana.

[2] Although there will be considerable tax money forthcoming from the extraction of coal, a lag of two or three years is anticipated before the bulk of this money will be available locally. Even so, some fear that the new demands for increased governmental, educational, and social services may exceed the new monetary supply; thus coal development may not pay its own way after all. Speaking of the school situation, one informant commented:

Coal and power companies have put landowners in the position of playing unfamiliar roles, especially in Montana where little or no industrialization of rural areas has occurred. Ranchers are poorly prepared to dicker and tend to get taken. They use nonadversarial values in negotiating, whereas companies are playing adversarial roles with great facility. Ranchers, who for the most part view the corporations as amoral, cold-blooded, and motivated more by profit than anything else, are at a great disadvantage in dealing with the companies, which have better information, trained and experienced staffs, and an operational ethic suited to treating landowners as exploitable natives.

> Mining companies make fools of us. They always lie about what they're intending to do and how much of if they intend to do. They are sneaky, deceptive, and so on. They get you to sign easements through lying and then it's too late to get a fair deal.

The percent of net proceeds tax paid the county has been reduced, with the balance going into the state general fund. Property taxes are paid and then redistributed on the basis of population for equalized school foundation funding. Consequently, no so-called "impact" money is made available to the affected counties.

Ranchers have no established information channels in which they can fully trust and believe. Too, ranchers persist in looking at land propositions mainly or entirely in an agricultural rather than industrial frame of reference, putting themselves in a very vulnerable position in negotiations. Companies take advantage of their knowledge that ranchers tend not to discuss land negotiations with each other because the latter are such go-it-aloners, reflecting the Western traditions of not openly passing judgment on how neighbors manage their land and cattle, of not discussing details of personal business matters with each other, and of not imposing one's views on others. Divide-and-conquer tactics, pincer movements, and the like can thus readily be used on ranchers, whose highly successful adaptation to the special demands of raising cattle in the West has left them very vulnerable to industrial or comparable socioeconomic interventions which can be coped with only through being capable of managing tendencies toward massive and rapid life-style changes.

In Wyoming, ranchers had already begun to develop a detachment from their land before the oil boom there occurred. Ranches were big, had employees, and were businesses which were very demanding and not always financially productive; oil lease money brought a new dimension to the alienation from the land which had already started. Land ties were further shaken by oil and are now in danger of being entirely severed by coal. Unlike in Montana, where love of the land is still widespread and evident and where people want to hold on to these ties, love of the land here is in process of becoming a thing of the past.[3]

Coal development does not constitute a burning issue for most old-time townspeople interviewed in Forsyth and Gillette. Either their lives are not directly affected by it or what ill effects they do anticipate, such as air pollution, are not feared to grow to an intolerable magnitude. For the most part locals are happy with the economic benefits which have accompanied development and do not feel that their way of life has changed all that much--nor is it expected to unless the population influx really becomes huge, which to date it has not.

> Most of us would not want our way of life to change very much. If there is a large expansion, it could seriously affect us. The effect so far is not very great.
>
> Life is pretty much as it has been--same old friends [and social circles].

Locals are concerned about obtaining an adequate number of professionals, particularly physicians and dentists; maintaining a school system whose quality of instruction will not be eroded in the face of rapidly increasing numbers of new students; and, especially in Montana, safeguarding the area water supply, which is widely feared to be inadequate for meeting projected demands. With the exception of increased prices and taxes, which have created a special hardship for those on fixed incomes, the social impact on townspeople so far has not been particularly unpalatable. Second thoughts about development are growing, however. "Where will development stop?" and "We are paying for our own destruction!" were comments often voiced as informants considered the costs and pressures attending development.

---

[3] One Montana rancher commented, "The very best that industrialization can offer is some extra money, which is too bad because, for people like me, land guarantees happiness, dollars don't."

For the most part, newcomers have not been accepted into the established social structure. Both they and locals tend to stay apart because of their differing values, interests, and commitments. As one informant viewed the situation, "Development always brings in a lot of riffraff." Newcomers who have common interests get together among themselves, and some have managed to make friends with locals and become accepted. Social life for most newcomers at Colstrip is characterized by a great deal of boredom, simply because there is so little for strangers to do in a small town, especially when one has no private land requiring attention. The lack of housing available and of land to buy is widespread throughout the study area, making living conditions difficult for most newcomers, who find themselves with virtually no alternative to crowded trailer parks or camp sites. There is little privacy or neighboring. They are situated like urban tourists in an unfamiliar rural world, with many resentful of local attitudes toward them:

> The locals resent our not paying taxes. Well, they won't let us have any land to have a house on which to pay taxes!

Planning for the overall impact of coal development has been difficult in most instances, especially in Montana where specific projections of future industrial activity and population growth are evidently not available or have not been made public. There is widespread receptivity to coal development in the Gillette area but not so much so in the Montana towns, which have much less interest in becoming industrialized communities and where a much smaller number of newcomers is expected to stay for an extended period of time.[4] Gillette is being favored with a wide variety of new people who have diverse interests, commitments, and skills, whereas most of the new residents in Montana are presently engaged in construction work which will be of a relatively short duration.

People in Gillette for the most part have already accepted industrial development as the emerging dominant economic mode. They have, on the whole, profited from oil development while experiencing minimal damage to land surface. Although the life-styles for many have changed drastically since the beginning of the oil boom, the activity has now leveled out and people are saying, "We handled it and we have benefited from it." Coal development is seen by many as similar to oil development except that it will be less sporadic and overwhelming and it will be more controlled. Also, Wyoming landowners feel they are now somewhat experienced in leasing; handling it or the sale of their property is not as threatening or discouraging as it is for Montana ranchers. As a group, the latter are much less favorably inclined toward development than are their Wyoming and North Dakota counterparts, who are more apt to desire the economic benefits to be gained even in the face of the "people pollution" and the changes in life-style which would accompany projected, large-scale industrialization.[5] As such, it would seem that any further development should be limited to the clearly receptive parts of North Dakota and Wyoming until the impact of presently authorized activity in the study area is known.

---

[4] It has been reported that the number of newcomers at Colstrip will drop from 1,500 to 150 when construction ends and plant operation begins (Billings Gazette, 17 March 1974). Of the 83 who will be manning plants one and two, 20 have already arrived (as of April 30, 1974).

Some informants have noted that power companies nationwide have been quick to ask for increases in rates to offset the recent trend in reduced power consumption, confirming their suspicions that the energy "demands" the companies have been citing as reason to develop Western coal are more created than real and are an excuse to seek more profits rather than to alleviate a true crisis situation. It seems that while the public is being asked to sacrifice and conserve energy, the companies consider that they should be exempted from bearing any part of the hardship, least of all through reduced earnings. Also, because so much of the energy to be generated through coal development will be going to people on the West

---

[5] It is the researchers' observation that few realize what all-out development really entails. Most in the study area would accept limited strip mining activity.

Coast and in the East and Midwest, most interviewees feel that these people are saying that their desires and values are superior to those of persons whose life-styles are threatened by coal development. There are enormous social costs in process of being paid by the comparatively few people ranching and farming in the coal areas of the Northern Great Plains. It appears to many informants that residents elsewhere in the nation apparently consider these costs trivial compared to the social benefits the latter will receive from the energy production activities here and that the present national energy shortage is being used as an excuse to

> . . . rip up our land in order to rip off the country's coal. There is no good excuse for that kind of destruction and larceny--yes, larceny because they are about to steal the country blind while making everybody think they are some kind of heroes. And while they foolishly use up this nonrenewable resource for manufacturing electricity and such, they will destroy the productivity of our land for God knows how many decades. The damn fools who think that coal will be a tax bonanza to the county or the state had better ask where the tax money is going to come from after this land is made worthless.

Regardless of the reason, these activities have created a constantly changing situation which has generated pervasive and oppressive feelings of uncertainty and vulnerability throughout the study region; and the effects are being felt in different ways by the many different groups residing in the study communities, each of which has its own distinct problems and concerns in coping with the uncertainties and insecurities associated with rapid industrialization.

The decision to continue to develop the energy resources of the Northern Great Plains will ultimately be political. Auspitz and Brown write:

> Partisan rhetoric does not make the fine distinctions of academia or adhere to the hard quantitative standards of business. But the fact is that the most basic questions of democracy will always be crude and qualitative. They boil down to simple questions of the speed of change, the degree of centralization, the distribution of the tax burden, and the priority of broad national purposes. These questions can be subjected to very sophisticated analyses but ultimately they involve brute choices . . .[6]

It is the authors' intent that the qualitative research presented in their report and summarized here will assist those who are now and will be involved in decisions which will so fatefully affect this part of the nation, those who are charged with planning for and dealing with the multifarious effects of these decisions, and those whose lives and life-styles will be changed as a result of coal-related industrial growth and development.

---

[6] J. L. Auspitz and C. W. Brown, Jr., "What's Wrong with Politics," Harper's Magazine 248, no. 1488 (May 1974): 61.